ARCADIS
Infrastructure · Water · Environment · Buildings

Imagine the result

Indoor Air Quality and Vapor Intrusion Assessment: Report of Results

Residence, Parcel 26/ 05/ 05 – South
Wells G&H Superfund Site
Woburn, Massachusetts

May 2011

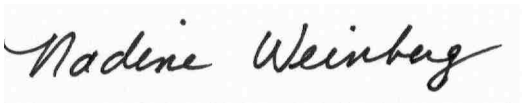
Submitted to:
United States Environmental Protection Agency Region 1
5 Post Office Square, Suite 100
Boston, Massachusetts 02109-3912

Prepared for:
UniFirst Corporation
68 Jonspin Road
Wilmington, Massachusetts 01887

ARCADIS

Indoor Air Quality and Vapor Intrusion Assessment: Report of Results

Residence, Parcel 26/ 05/ 05 – South Wells G&H Superfund Site
Woburn, Massachusetts



Nadine Weinberg
Principal Scientist/Project Manager

Brian Magee, PhD
Vice President and Principal Toxicologist
Human Health Risk Assessment Technical Leader

Prepared by:
ARCADIS U.S., Inc.
2 Executive Drive
Suite 303
Chelmsford
Massachusetts 01824
Tel 978 937 9999
Fax 978 937 7555

Our Ref.:
MA000989.0002

Date:
May 2011

ARCADIS

Table of Contents

Table of Contents

1. Introduction

On behalf of UniFirst Corporation (UniFirst), ARCADIS has prepared this Indoor Air Quality and Vapor Intrusion Assessment: Report of Results for sampling conducted on April 21-22, 2011 at the southern half of the residential duplex in Woburn, Massachusetts, identified in the tax assessors' records as Woburn Parcel Number 26/ 05/ 05 (the Residence). ARCADIS conducted sub-slab soil vapor, indoor ambient air, and outdoor ambient air sampling. All work was completed in accordance with the *Vapor Intrusion Assessment Work Plan* (*Work Plan*) approved by the United States Environmental Protection Agency (USEPA) on February 17, 2011 (ARCADIS 2011).

As stated in the *Work Plan*, USEPA requested the collection of sub-slab soil gas, indoor air, and ambient air samples from certain residential and commercial properties located on Olympia Avenue, Oregon Avenue, and Marietta Street (Study Area). The Residence is one of the properties that USEPA identified for study. The *Work Plan* was submitted to and approved by USEPA to establish the sampling methods and procedures to be followed. The objectives of the sampling were to:

- Measure concentrations of volatile organic compounds (VOCs) in sub-slab soil vapor and indoor air at each property identified for study by USEPA in the Study Area; and

- Measure concentrations of VOCs in outdoor air near these properties to evaluate atmospheric conditions at the time of indoor air sample collection.

The results of the vapor intrusion sampling, sampling methodology, a discussion of the sampling results including a preliminary human health risk evaluation, and recommendations for future actions are provided below.

2. Sampling Program

Consistent with the *Work Plan,* ARCADIS collected sub-slab soil vapor, indoor air, and ambient air samples from the Residence on April 21-22, 2011. Specific sampling methodologies were consistent with the *Indoor Air Quality and Vapor Intrusion Assessment Scope of Work – Revision 2* (*SOW*) (JCO 2010a) and the *Quality Assurance Project Plan – Revision 1* (*QAPP*) (JCO 2010b). Pre-sampling activities, sampling methodologies, and sample locations are described below. Sample logs are provided in Appendix A.

2.1 Pre-Sampling Activities

Prior to sampling, ARCADIS, in coordination with USEPA, was granted access to the Residence from the current property owner. Sample locations were agreed upon between USEPA, ARCADIS, and the current property owner. ARCADIS conducted a site reconnaissance prior to sampling to identify the building and foundation condition, building materials, heating, ventilation, and air conditioning (HVAC) operation, and potential preferential vapor migration pathways (i.e., sump pump, floor drains, cracks). To the extent feasible (the premises are leased to tenants), a product inventory was completed to list items observed in the building that may contain VOCs that could potentially interfere with sample results.

During the building survey the following potential background sources were identified:

- Bleach was noted in the home during the site visit, which may be a source of chloroform via reactions with other cleaning products (Odabasi 2008).

- Spray paint canisters were noted during the building survey. These could be sources of toluene.

- Various other cleaning products and aerosols were also noted during the product inventory.

Since indoor air sampling was conducted only in the basement, the survey was not extended to the first floor, but additional background sources of chemicals are possible in those areas. In addition, because the current tenants were not at the home during the sampling, it was not possible to ask about specific background contributions, including dry cleaning. All products found in the basement were containerized and removed from the home approximately 24 hours prior to sampling. The building survey and product inventory can be found in Appendix B.

2.2 Installation of Sub-Slab Soil Vapor Points

Two permanent sub-slab soil vapor sample points were installed in the basement of the Residence on April 20, 2011. Sample locations can be seen in Figure 1. Sample methods were consistent with those described in the *SOW* (JCO 2010a) and *QAPP* (JCO 2010b). The permanent sample points were constructed of decontaminated stainless steel fittings assembled prior to the field event. The permanent sample points were cemented into the drilled holes using hydraulic cement. The permanent sample

points were allowed to equilibrate for at least 24 hours after installation prior to sampling. Detailed methods for permanent sample point installation are included in SOP-JCO-062 contained in the *QAPP* (JCO 2010b).Consistent with the *SOW* (JCO 2010a) and *QAPP* (JCO 2010b), a helium tracer test was completed prior to sampling each sub-slab soil vapor point to test the integrity of the probe installation.

2.3 Indoor Ambient Air Assessment

On April 21, 2011, indoor air sampling was initiated at two locations on the basement level of the Residence. Indoor air samples collected in the basement were co-located with the installed sub-slab soil vapor points. The basement of the Residence is used as a primary living space and, consistent with the approved Work Plan, no other floors were sampled. Sample locations are presented in Figure 1. Sample methods were consistent with the *SOW* (JCO 2010a) and *QAPP* (JCO 2010b). Samples were collected from the breathing zone (3 to 4 feet above ground surface) above each sub-slab soil vapor location. To avoid any cross contamination issues with potential vapors under the floor slab, indoor air samples were collected prior to sub-slab soil vapor samples. To ensure a reasonable worst case scenario, indoor air sampling was conducted with all exterior building doors closed to avoid any dilution with outside air.

Samples were collected over a 24-hour period in individually certified six-liter passivated sample canisters provided by Alpha Analytical, Inc. of Mansfield, Massachusetts (Alpha), a National Environmental Laboratory Accreditation Conference (NELAC) (E87814) certified laboratory. Canisters were analyzed for VOCs by USEPA Method TO-15 featuring selective ion monitoring (SIM). Detailed sample collection methods are included in the *SOW (JCO 2010a)* and in SOP-JCO-063 contained in the *QAPP* (JCO 2010b). Sample logs from indoor air sampling are included in Appendix A.

2.4 Outdoor Ambient Air Assessment

On April 21, 2011, outdoor air sampling was initiated at one upwind location outside the Residence using the same methods as described for indoor air samples. The sample was collected to understand what contribution the ambient environment may have on indoor air samples collected from inside the building. Sample locations are presented in Figure 1. The outdoor ambient air and indoor air samples were collected over approximately the same 24-hour time period, with the outdoor sample being started immediately prior to the indoor air samples. Sample logs from ambient air sampling are included in Appendix A.

2.5 Sub-Slab Soil Vapor Assessment

At the completion of the indoor air sampling on April 22, 2011, sub-slab soil vapor samples were collected from two sample locations in the Residence. Prior to sampling, three volumes of the sample tubing were purged utilizing a low-flow pump to remove any ambient air from the sampling train. Detailed methods for sampling are included in SOP-JCO-062 contained in the *QAPP* (JCO 2010b) and in the *Work Plan* (ARCADIS 2011). Samples were collected over a 30-minute period in individually certified six-liter passivated sample canisters provided by Alpha. Canisters were analyzed for VOCs by USEPA Method TO-15 featuring SIM. Sample logs from sub-slab soil vapor sampling are included in Appendix A.

2.6 Data Synthesis and Reporting

Analytical data packages generated by the laboratory were validated by Phoenix Chemistry Services according to national guidelines for tier III data validation as described in the *SOW* (JCO 2010a) and *QAPP* (JCO 2010b). The data review included: field documentation, proper holding times, proper chain-of-custody documentation, achievement of target reporting limits, acceptable laboratory calibrations and quality control parameters, and representativeness of duplicate results.

Findings of the validation effort resulted in the following qualifications of sample results:

- Results for methyl tert-butyl ether (MTBE) and trans-1,3-dichloropropene in all samples were qualified as estimated (UJ).

- Positive results for naphthalene greater than the sample-specific (adjusted) quantitation limit, but less than twice the blank concentration in samples IA-4 and the duplicate of IA-5 were qualified as less than the reported value (U).

Quality control results, including any revisions or qualifiers deemed necessary, are included in Tables 1 and 2. The data validation report is included in Appendix C. The laboratory analytical data package is included in Appendix D.

3. Results and Discussion

This section presents results for indoor air, ambient outdoor air, and sub-slab soil vapor samples collected at the Residence, including a summary evaluation of potential

human health risks. A copy of the complete Preliminary Human Health Risk Evaluation can be found in Appendix E.

3.1 Indoor and Outdoor Ambient Air Sampling Results

Analytical data for indoor and outdoor ambient air samples are presented on Table 1. The following compounds were detected in both indoor air samples: 1,2,4-trimethylbenzene, 1,2-dichloroethane, 1,3-butadiene, benzene, carbon tetrachloride, chloroform, ethylbenzene, tetrachloroethene (PCE), toluene, and xylenes. Detected concentrations of these constituents are presented in Table 1.

The following constituents were detected in the outdoor ambient air sample: benzene, carbon tetrachloride, ethylbenzene, and toluene. Detected concentrations of these constituents are presented in Table 1.

A comparison of the data indicates that several constituents were detected in both outdoor and indoor air. Carbon tetrachloride and benzene were measured at similar concentrations in indoor and outdoor air. Although ethylbenzene and toluene were detected in both outdoor and indoor air, concentrations were greater in indoor air compared to outdoor ambient air.

3.2 Sub-Slab Soil Vapor Sampling Results

Analytical data for sub-slab soil vapor are presented in Table 2. The following compounds were detected in both sub-slab soil vapor samples: carbon tetrachloride, chloroform, and PCE. Toluene was only detected in one sub-slab soil vapor sample, SS-4. Detected concentrations of these constituents are presented in Table 2.

3.3 Evaluation of Indoor Air and Sub-slab Soil Vapor Results

The data results for indoor air and sub-slab soil vapor were evaluated together to determine if indoor air samples were associated with a potential background source. As a first step, attenuation factors (AFs) were calculated to evaluate if chemicals present in indoor air could potentially be associated with sub-slab soil vapor levels, or if chemicals may be attributable to background sources. The AF is the ratio of indoor air to sub-slab soil vapor results and was calculated when a constituent was detected in both indoor air and sub-slab soil vapor. AFs close to or greater than one indicate that indoor air concentrations are equal to or higher than sub-slab soil vapor concentrations and, therefore, that a background source likely is present. Of the 10 chemicals

detected in indoor air, attenuation factors could be calculated for four. Of the four chemicals with both indoor and sub-slab detections, carbon tetrachloride, chloroform, and toluene had AFs greater than one. As a result, the presence of these chemicals in indoor air is attributable to background sources and not soil vapor intrusion. The AF calculated for PCE was 0.33, which suggests a background source may be contributing to the concentration noted in indoor air. The AF calculated on the other half of the duplex was 0.0033, two orders of magnitude lower than the Residence. This suggests a possible background source, such as dry cleaned clothing, which has been shown to contribute to elevated levels of PCE in indoor air (Magee et al. 2008). As noted above, ARCADIS' field staff did not conduct an inventory in the upstairs portion of the Residence and were not able to interview the actual tenants of the Residence, because they were not present during the sampling event.

Second, the data were evaluated to identify constituents that were detected only in indoor air. These results indicate that a background material is the only source of the detected indoor air concentrations. 1,2,4-trimethylbenzene, 1,2-dichloroethane, 1,3-butadiene, benzene, ethylbenzene, and xylenes were identified as having background sources based on this criterion.

Third, the results of indoor air and outdoor air samples were compared. Carbon tetrachloride and benzene were measured at similar concentrations in outdoor ambient air. These results indicate background sources are present in outdoor ambient air.

Of all the chemicals detected in indoor air, only PCE was detected in indoor air at a lower concentration compared to the co-located sub-slab soil vapor samples. Sub-slab soil vapor therefore may be a contributing source of PCE detections in indoor air. The low concentrations of PCE detected, however, are consistent with those typically measured in residences, as reported by USEPA and the Massachusetts Department of Environmental Protection (MADEP). PCE was detected in indoor air samples in the Residence at concentrations between 1.9 and 2.09 µg/m^3. For PCE, USEPA's indoor air background database reported a 50th percentile value of 0.7 µg/m^3, a 75th percentile value of 1.4 µg/m^3, and a 90th percentile value of 3.8 µg/m^3 (Dawson 2008). The PCE concentrations measured in the Residence were slightly above the MADEP (2008) Threshold Value (TV) for PCE of 1.4 µg/m^3, but based on the calculated AF it is likely that background sources of PCE (e.g., dry-cleaned clothes) are present in the Residence.

3.4 Residence Human Health Risk Evaluation

Preliminary human health risk calculations were performed using the April 2011 validated indoor air data. The Preliminary Human Health Risk Evaluation Report and supporting calculations can be found in Appendix E. The conclusions from that report are summarized below.

Potential risks from indoor air were calculated assuming a homebound individual lives in the Residence for 30 years, 24 hours per day, and 350 days per year. For each constituent, the exposure point concentration in indoor air is equal to the average concentration of the two indoor air results. The estimated total cancer risk associated with long term exposure to indoor air in the basement of the home is $2x10^{-5}$, primarily associated with background sources including chloroform. Of the total risk, 25% ($5x10^{-6}$) is associated with PCE which, as noted above, likely originates in part from background sources in the Residence. The majority of risk, therefore, is associated with background sources. Chloroform was detected at higher concentrations in indoor air than sub-slab soil vapor. Most other constituents contributing to the total risk level (1,2-dichloroethane, 1,3-butadiene, benzene, and ethylbenzene) were not detected in sub-slab soil vapor, indicating a source inside the home or background source.

As previously discussed, many background sources of VOCs were noted in the basement and first floor of the home. These included paints and cleaning products. Based on the sampling results, other as yet unidentified background sources likely are present in the Residence.

4. Summary and Conclusions

The potential carcinogenic risk level estimated for the low levels of PCE detected in the Residence is $5x10^{-6}$, a level of risk that is within USEPA's risk range for Superfund sites. The estimated total risk, including exposure to other compounds in the Residence originating from background sources, is $2x10^{-5}$, primarily due to chloroform. The low concentrations of PCE detected in the basement of the Residence are consistent with those typically measured in residences, as reported by USEPA and MADEP. Measured concentrations are slightly above the MADEP TV for PCE (1.4 $\mu g/m^3$), but based on the calculated AF, a background source is likely to be present.

5. Recommendations

In accordance with the approved *Vapor Intrusion Assessment Work Plan: Off-Site Sub-slab and Indoor Air Evaluation* (ARCADIS 2011), another round of sampling will be conducted under non-heating season conditions for comparison to the first round of results.

6. References

ARCADIS. 2011. Vapor Intrusion Assessment Work Plan: Off-Site Sub-slab and Indoor Air Evaluation, Wells G&H Superfund Site, Woburn, Massachusetts, January 7.

Dawson, Helen. 2008. Background Indoor Air Concentrations of Volatile Organic Compounds in North American Residences. Literature Review & Implications for Vapor Intrusion Assessment. Vapor Intrusion Workshop – AEHS Spring 2008, San Diego, California.

Massachusetts Department of Environmental Protection (MADEP). 2008. Indoor Air Threshold Values for the Evaluation of a Vapor Intrusion Pathway, Technical Update, Draft. June 26.

Odabasi, M. 2008. Halogenated Volatile Organic Compounds from the Use of Chlorine-Bleach-Containing Household Products. Environ. Sci. Technol. 42:1445-1451.

The Johnson Company (JCO). 2010a. Indoor Air Quality and Vapor Intrusion Assessment Scope of Work, Revision 2, UniFirst Property, Wells G&H Superfund Property. March 25.

JCO. 2010b. Quality Assurance Project Plan, Revision 1, Indoor Air Quality and Vapor Intrusion Assessment, UniFirst Property, Wells G&H Superfund Property. March 25.

Magee, B., I. Penn, G. Logoni and S. Livio. 2008. Typical Levels of Tetrachlorethylene and Trichloroethylene in Residential Indoor Air. CONSOIL Conference. Milan, Italy.

ARCADIS

Table 1. Residential Indoor and Ambient Air Data

Sample Name: Location: Date Collected:	Units	IA-4 Basement 4/22/2011	IA-5 Basement 4/22/2011	Average Detected Concentration in Indoor Air	OA-1 Outdoor 4/22/2011
1,1,1-Trichloroethane	ug/m3	0.109 U	0.109 U [0.109 U]	ND	0.109 U
1,1,2-Trichloroethane	ug/m3	0.109 U	0.109 U [0.109 U]	ND	0.109 U
1,1-Dichloroethane	ug/m3	0.0809 U	0.0809 U [0.0809 U]	ND	0.0809 U
1,1-Dichloroethene	ug/m3	0.0792 U	0.0792 U [0.0792 U]	ND	0.0792 U
1,2,4-Trimethylbenzene	ug/m3	0.201	0.167 [0.157]	0.182	0.0982 U
1,2-Dibromoethane	ug/m3	0.154 U	0.154 U [0.154 U]	ND	0.154 U
1,2-Dichloroethane	ug/m3	0.125	0.113 [0.125]	0.122	0.0809 U
1,2-Dichloropropane	ug/m3	0.0924 U	0.0924 U [0.0924 U]	ND	0.0924 U
1,3-Butadiene	ug/m3	0.148	0.115 [0.124]	0.134	0.0442 U
1,3-Dichlorobenzene	ug/m3	0.12 U	0.12 U [0.12 U]	ND	0.12 U
1,4-Dichlorobenzene	ug/m3	0.12 U	0.12 U [0.12 U]	ND	0.12 U
Benzene	ug/m3	0.485	0.46 [0.469]	0.475	0.326
Bromodichloromethane	ug/m3	0.134 U	0.134 U [0.134 U]	ND	0.134 U
Bromoform	ug/m3	0.206 U	0.206 U [0.206 U]	ND	0.206 U
Carbon Tetrachloride	ug/m3	0.358	0.339 [0.339]	0.349	0.352
Chlorobenzene	ug/m3	0.092 U	0.092 U [0.092 U]	ND	0.092 U
Chloroform	ug/m3	1.18	0.629 [0.663]	0.913	0.0976 U
cis-1,2-Dichloroethene	ug/m3	0.0792 U	0.0792 U [0.0792 U]	ND	0.0792 U
Ethylbenzene	ug/m3	0.317	0.295 [0.304]	0.308	0.087
Isopropylbenzene	ug/m3	2.46 U	2.46 U [2.46 U]	ND	2.46 U
Methylene Chloride	ug/m3	1.74 U	1.74 U [1.74 U]	ND	1.74 U
Methyl tert-butyl ether	ug/m3	0.072 UJ	0.072 UJ [0.072 UJ]	ND	0.072 UJ
Naphthalene	ug/m3	0.183 UJ	0.262 UJ [0.131 UJ]	ND	0.262 U
Tetrachloroethene	ug/m3	1.9	1.96 [2.09]	1.96	0.136 U
Toluene	ug/m3	3.1	2.96 [2.97]	3.03	0.561
trans-1,2-Dichloroethene	ug/m3	0.0792 U	0.0792 U [0.0792 U]	ND	0.0792 U
trans-1,3-Dichloropropene	ug/m3	0.0907 UJ	0.0907 UJ [0.0907 UJ]	ND	0.0907 UJ
Trichloroethene	ug/m3	0.107 U	0.107 U [0.107 U]	ND	0.107 U
Vinyl Chloride	ug/m3	0.0511 U	0.0511 U [0.0511 U]	ND	0.0511 U
Xylenes (total)	ug/m3	0.698	0.681 [0.672]	0.687	0.26 U

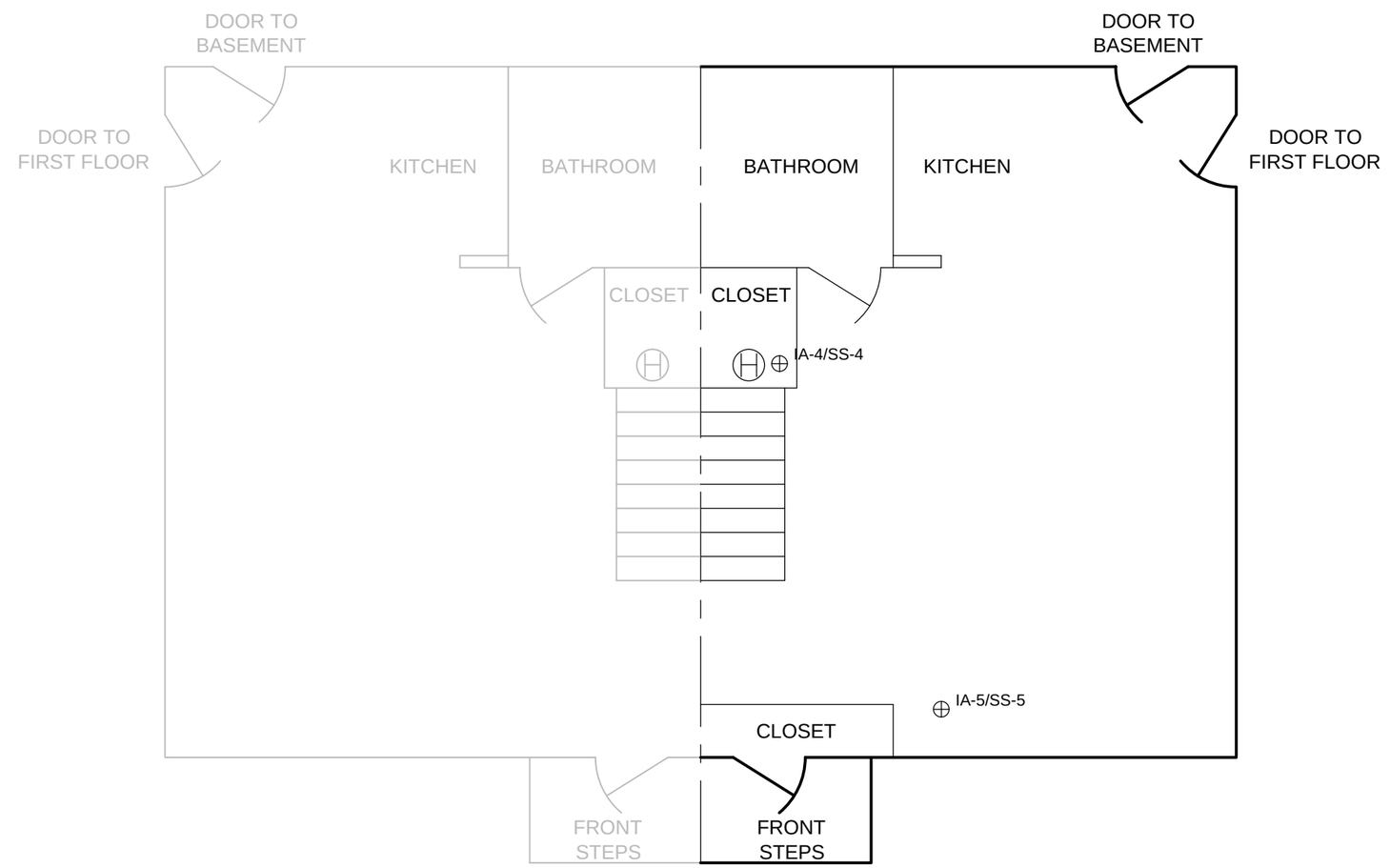
Notes:
ug/m3 - Micrograms per cubic meter
U - The compound was analyzed for but not detected. The associated value is the compound quantitation limit
J - The value given is estimated
IA - Indoor air sample
OA - Ambient air sample
ND - Not detected

ARCADIS

Table 2. Residential Sub-slab Soil Vapor Data

Sample Name: Location: Date Collected:	Units	SS-4 Sub-Slab 4/22/2011	SS-5 Sub-Slab 4/22/2011	Average Detected Concentration Sub-Slab Soil Vapor
1,1,1-Trichloroethane	ug/m3	0.109 U [0.109 U]	0.109 U	ND
1,1,2-Trichloroethane	ug/m3	0.109 U [0.109 U]	0.109 U	ND
1,1-Dichloroethane	ug/m3	0.0809 U [0.0809 U]	0.0809 U	ND
1,1-Dichloroethene	ug/m3	0.0792 U [0.0792 U]	0.0792 U	ND
1,2,4-Trimethylbenzene	ug/m3	0.0982 U [0.0982 U]	0.0982 U	ND
1,2-Dibromoethane	ug/m3	0.154 U [0.154 U]	0.154 U	ND
1,2-Dichloroethane	ug/m3	0.0809 U [0.0809 U]	0.0809 U	ND
1,2-Dichloropropane	ug/m3	0.0924 U [0.0924 U]	0.0924 U	ND
1,3-Butadiene	ug/m3	0.0442 U [0.0442 U]	0.0442 U	ND
1,3-Dichlorobenzene	ug/m3	0.12 U [0.12 U]	0.12 U	ND
1,4-Dichlorobenzene	ug/m3	0.12 U [0.12 U]	0.12 U	ND
Benzene	ug/m3	0.223 U [0.223 U]	0.223 U	ND
Bromodichloromethane	ug/m3	0.134 U [0.134 U]	0.134 U	ND
Bromoform	ug/m3	0.206 U [0.206 U]	0.206 U	ND
Carbon Tetrachloride	ug/m3	0.17 [0.163]	0.327	0.247
Chlorobenzene	ug/m3	0.092 U [0.092 U]	0.092 U	ND
Chloroform	ug/m3	0.122 [0.112]	0.18	0.149
cis-1,2-Dichloroethene	ug/m3	0.0792 U [0.0792 U]	0.0792 U	ND
Ethylbenzene	ug/m3	0.0868 U [0.0868 U]	0.0868 U	ND
Isopropylbenzene	ug/m3	2.46 U [2.46 U]	2.46 U	ND
Methylene Chloride	ug/m3	1.74 U [1.74 U]	1.74 U	ND
Methyl tert-butyl ether	ug/m3	0.072 UJ [0.072 UJ]	0.072 UJ	ND
Naphthalene	ug/m3	0.262 U [0.262 U]	0.262 U	ND
Tetrachloroethene	ug/m3	12 [11.3]	0.352	6.00
Toluene	ug/m3	0.188 U [0.233]	0.188 U	0.233
trans-1,2-Dichloroethene	ug/m3	0.0792 U [0.0792 U]	0.0792 U	ND
trans-1,3-Dichloropropene	ug/m3	0.0907 UJ [0.0907 UJ]	0.0907 UJ	ND
Trichloroethene	ug/m3	0.107 U [0.107 U]	0.107 U	ND
Vinyl Chloride	ug/m3	0.0511 U [0.0511 U]	0.0511 U	ND
Xylenes (total)	ug/m3	0.26 U [0.26 U]	0.26 U	ND

Notes:
U - The compound was analyzed for but not detected. The associated value is the compound quantitation limit
ug/m3 - Micrograms per cubic meter
SS - Sub-slab soil vapor sample
ND - Not detected



LEGEND:

⊕ SAMPLING LOCATION

Ⓗ HOT WATER HEATER

NOTES:

1. ALL LOCATIONS ARE APPROXIMATE.
2. NOT TO SCALE.

UNIFIRST CORPORATION
WOBURN, MA

INDOOR AIR QUALITY AND VAPOR INTRUSION ASSESSMENT: REPORT OF RESULTS

RESIDENCE SAMPLE LOCATIONS - APRIL 2011

ARCADIS

FIGURE
1

CITY: SYRACUSE, NY DIV/GROUP: 141/ENVCAD DB: L.POSENAUER LD:(Opt) PIC:(Opt) PM: N.WEINBERG TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
G:\ENVCAD\SYRACUSE\ACTIVITY\MA000989\0002\0005B\DWG\OREGAN\00989G02.DWG LAYOUT: 1 SAVED: 5/11/2011 5:10 PM ACADVER: 18.0S (LMS TECH) PAGESETUP: C:\LB-PDF-CONV PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 5/11/2011 5:11 PM BY: STOWELL, GARY
XREFS:
00989X01
00989XBL
IMAGES:
PROJECTNAME: ---

Appendix A

Sampling Logs

ARCADIS

Indoor Air Sample Collection Log

		Sample ID:	IA-4
Client:	On, First	Outdoor/Indoor:	Indoor
Project:	Wells G & H	Sample Intake Height:	5'
Location:	Woburn, MA	Tubing Information:	—
Project #:	MA000989.2.3	Miscellaneous Equipment:	—
Samplers:	M. Wacksman	Time On/Off:	
Sample Point Location:	REDACTED Utility Closet in Basement	Subcontractor:	—

Instrument Readings:

Date	Time	Canister Vacuum (a) (inches of Hg)	Temperature (°F or °C)	Relative Humidity (%)	Air Speed (ft/min)	Barometric Pressure (inches of Hg)	PID (ppb)
4/21/2011	1016	-30"	69.1	55%	0	29.85	
4/22/2011	0909	-6.4"					
	1016	-5.2"	65.6	57%	0	30.35	

(a) Record canister information at a minimum at the beginning and end of sampling

SUMMA Canister Information:

Size (circle one):	1 L (6 L)
Canister ID:	4833
Flow Controller ID:	420
Notes:	

General Observations/Notes:

ARCADIS

Indoor Air Sample Collection Log

Sample ID:	IA-5	Dup 04211	
Client:	UniFirst	Outdoor/Indoor:	Indoor
Project:	Wells G & H	Sample Intake Height:	4'
Location:	Woburn, MA	Tubing Information:	—
Project #:	MA000989.2.3	Miscellaneous Equipment:	—
Samplers:	M. Wadsworth	Time On/Off:	
Sample Point Location:	REDACTED Basement	Subcontractor:	—

Instrument Readings:

Date	Time	Canister Vacuum (a) (inches of Hg)	Temperature (°F or °C)	Relative Humidity (%)	Air Speed (ft/min)	Barometric Pressure (inches of Hg)	PID (ppb)
4/21/11	1020	-30" / -29	69.1°F	55%	0	29.85	
4/21/11	0909	-9.0" / -5.7					
	1018	-7.9" / -4.5	65.6°F	57%	0	30.35	

(a) Record canister information at a minimum at the beginning and end of sampling

SUMMA Canister Information:

Size (circle one):	1 L (6 L)	Duplicate
Canister ID:	1565	CAN 1658
Flow Controller ID:	476	FC 017
Notes:		

General Observations/Notes:

ARCADIS

Indoor Air Sample Collection Log

Client:	UniFirst	Sample ID:	OA-01
Project:	Wells G & H	Outdoor/Indoor:	Outdoor
Location:	Woburn, MA	Sample Intake Height:	
Project #:	MA000989.2.3	Tubing Information:	—
Samplers:	M Wacksman	Miscellaneous Equipment:	
Sample Point Location:	upwind of REDACTED	Time On/Off:	
		Subcontractor:	—

Instrument Readings:

Date	Time	Canister Vacuum (a) (inches of Hg)	Temperature (°F or °C)	Relative Humidity (%)	Air Speed ~~(ft/min)~~	Barometric Pressure (inches of Hg)	PID (ppb)
4/21/2011	0958	-29.99	57°F	41%	6mph	29.84	
4/22/2011	0849	-3.4"	51.4°	41%	1mph	30.36	

(a) Record canister information at a minimum at the beginning and end of sampling

SUMMA Canister Information:

Size (circle one):	1 L (6L)
Canister ID:	1541
Flow Controller ID:	427
Notes:	

General Observations/Notes:

Sample is upwind of REDACTED

Wind blowing from West, quite Gusty on 4/21
Wind is blowing from NW on 4/22

ARCADIS

Subslab Soil Vapor Sample Collection Log

		Sample ID:	SS-4 Dup SS42211
Client:	UniFirst	Boring Equipment:	Drill
Project:	Wells G&H	Sealant:	Clay & hydraulic Cement
Location:	Woburn, MA	Tubing Information:	Teflon
Project #:	MA000989.0002.0003	Miscellaneous Equipment:	Purge pump
Samplers:	M Nackgman	Subcontractor:	None
Sample Point Location:	REDACTED Basement, Utility	Equipment:	—
Sampling Depth:	4/20/2011 ~~11:30am~~ mw Closed 4" slab	Moisture Content of	Dry
Time and Date of Installation:	4/20/2011 11:30am	Approximate Purge Volume:	1 MIN @ 50 ml/min

Instrument Readings:

Date	Time	Canister Vacuum (a) (inches of Hg)		Temperature (°F or °C)	Relative Humidity (%)	Air Speed (ft/min)	Barometric Pressure (inches of Hg)	PID (ppb)
4/22/11	1240	-30	-30	66.1°F	55%	0	30.34	
	1255	-14.3	-14.7					
	1310	-6.0	-6.9					

(a) Record canister information at a minimum at the beginning and end of sampling

SUMMA Canister Information:

Size (circle one):	1 L	6 L (Dup)
Canister ID:	623	789
Flow Controller ID:	285	058
Notes:		

Dup SS42211

Tracer Test Information (if applicable):

Initial Helium Shroud:	~~67%~~ 73%
Final Helium Shroud:	54%
Tracer Test Passed:	(Yes) No
Notes:	No Helium in Purge

General Observations/Notes:

Approximating One-Well Volume (for purging):

When using 1¼-inch "Dummy Point" and a 6-inch sampling interval, the sampling space will have a volume of approximately 150 mL. Each foot of ¼-inch tubing will have a volume of approximately 10 mL.

ARCADIS

Subslab Soil Vapor Sample Collection Log

		Sample ID:	~~IA~~ SS-5
Client:	UniFirst Wells G&H	Boring Equipment:	Drill
Project:	Wells G&H	Sealant:	Clay & Hydraulic Cement
Location:	Woburn, MA	Tubing Information:	Teflon
Project #:	MA000909.0002.00003	Miscellaneous Equipment:	purge pump
Samplers:	M Wackerman	Subcontractor:	None
Sample Point Location:	REDACTED Basement, under slab	Equipment:	—
Sampling Depth:	4'	Moisture Content of	Dry
Time and Date of Installation:	4/20/11 11am	Approximate Purge Volume:	1 Minute @ 50ml/min

Instrument Readings:

Date	Time	Canister Vacuum (a) (inches of Hg)	Temperature (°F or °C)	Relative Humidity (%)	Air Speed (ft/min)	Barometric Pressure (inches of Hg)	PID (ppb)
4/22/2011	1222	-30.2"	66.1°F	55%	0	30.34	
	1240	-15.3					
	1252	-6.9" Hg					

(a) Record canister information at a minimum at the beginning and end of sampling

SUMMA Canister Information:

Size (circle one):	1 L (6 L)
Canister ID:	1672
Flow Controller ID:	332
Notes:	

Tracer Test Information (if applicable):

Initial Helium Shroud:	63%
Final Helium Shroud:	58%
Tracer Test Passed:	(Yes) No
Notes:	No helium in purge

General Observations/Notes:

Approximating One-Well Volume (for purging):

When using 1¼-inch "Dummy Point" and a 6-inch sampling interval, the sampling space will have a volume of approximately 150 mL. Each foot of ¼-inch tubing will have a volume of approximately 10 mL.

Appendix B

Building Survey, Product Inventory Field Form, and Associated MSDS Forms

THE JOHNSON COMPANY, INC.
100 State Street, Suite 600
Montpelier, Vermont 05602
(802) 229-4600

SOP-JCO-063-002

DRAFT

Indoor Air Quality Building Survey

Sampler: M Wackerman Date: 4/20/2011 JCO #: _____

Address: [redacted]

Woburn, MA [redacted]

Contact Name:

List of Current Occupants/Occupation:

Age (if under 18)	Sex (m/f)	Occupation
Adult	M	Car Sales
Adult	F	High tech - office work
2	M	> Stay at home occasionally
3	F	

Building Construction Characteristics:

What type of building is it? (Circle appropriate responses)

Single Family (Multi-Family) School Commercial Industrial

Ranch
Raised Ranch
Cape
Colonial
Split Level
Mobile Home

2-Family
(Duplex)
Apartment House (# of units 2)
Condominium (# of units ____)
Other (specify) _____

General description of building construction materials: Finished Basement & 2 above grade floors. Basement acts as a bedroom

Number of occupied stories: 3 Year built? 1985

Has the building been weatherized with any of the following? (Circle all that apply)

Insulation Storm windows Energy-efficient windows Other (specify)
No new windows

Attached garage? (Y/N) Y Vehicle(s) present? (Y/N) _____

Source: MaDEP, 2002, "Indoor Air Sampling and Evaluation Guide, WSC Policy #02-430", Office of Research and Standards, Massachusetts Department of Environmental Protection, April, 2002.

What type of basement does the building have? (Circle all that apply)

Full basement Crawlspace Slab-on-grade Other (specify)

What are the characteristics of the basement? (Circle all that apply)

	Basement Floor:	Foundation Walls:	Moisture:
Finished	Concrete	Poured concrete	Wet
Unfinished	Dirt	Block	Damp
Partially finished (%)	Other (specify)	Field stone	Dry

Is a basement sump present? (Y/N) N French drain outside Is sump sealed to indoor air? (Y/N) _____

Does the basement have any of the following characteristics (e.g., preferential vapor pathways) that might permit soil vapor entry? (Circle all that apply) Carpeted & Tiled

Cracks Pipe/utility conduits Other (specify)

Foundation/slab drainage Sump pumps

Heating and Ventilation System(s) Present:

What types of heating system(s) are used in this building? (Circle all that apply)

Hot air circulation Heat pump Steam Radiation Wood stove

Other (specify) Air conditioner (central/window) Fireplace (wood/gas)

Baseboard, Electric

What types of fuels are used in this building? (Circle all that apply)

Natural gas Electric Coal Other (specify)

Fuel oil Wood Solar

What type of mechanical ventilation systems are present and/or currently operating in this building? (Circle all that apply)

Central air conditioning Mechanical fans Bathroom vent fan

Individual air conditioning Kitchen range hood Air-to-air heat exchanger

Open windows Other (specify)

Sources of Chemical Contaminants:

Source: MaDEP, 2002, "Indoor Air Sampling and Evaluation Guide, WSC Policy #02-430", Office of Research and Standards, Massachusetts Department of Environmental Protection, April, 2002.

Which of these are present in the building?

Potential VOC Source	Location of Source	Major Ingredients	Removed Prior to Air Sampling (Y/N/NA)
Paint or paint thinners			
Gas-powered equipment			
Gasoline storage cans			
Cleaning solvents			
Air fresheners	Basement	*	Y
Oven cleaners			
Carpet/ upholstery cleaners	Basement	*	Y
Hairspray	Basement	*	Y
Nail polish/ remover	Basement	*	Y
Bathroom cleaner	Basement	*	Y
Appliance cleaner	Basement	*	Y
Furniture/ floor polish	Basement	*	Y
Moth balls			
Fuel oil tank			
Wood stove			
Fireplace			
Perfume/ colognes			
Hobby supplies			
Scented potpourri, etc			
Brake cleaner			
Liquid Wrench			
Other			
Other			
Other			

* See Product Inventory

Do one or more smokers occupy this building on a regular basis? NO

Has anyone smoked in the building in the last 48 hours? (Y/N) _____

Do the occupants frequently have clothes dry-cleaned? (Y/N) _____

Any recent remodeling or repainting (Y/N, describe) ~~New Carpet~~

Any obvious pressed wood products (e.g. hardwood plywood paneling, particleboard, fiberboard)? (Y/N) _____ & Tile

Are there any new upholstery, drapes, carpets, or other textiles? (Y/N) New Carpet & 1 year ago

Source: MaDEP, 2002, "Indoor Air Sampling and Evaluation Guide, WSC Policy #02-430", Office of Research and Standards, Massachusetts Department of Environmental Protection, April, 2002.

Has the building been treated with any insecticides/pesticides? If so, how often and what chemicals were used? Not recently

Do any of the occupants apply pesticides/herbicides in the yard or garden? If so, how often and what chemicals are used? _____

Outdoor Sources of Contamination:

Is there any stationary emission source in the vicinity of the building? Former UniFirst Facility water treatment system

Are there any mobile emission sources (e.g., highway; bus stop; high-traffic area) in the vicinity of the building?
Highway

Weather Conditions During Sampling:

Outside Temperature (°F): _____

Prevailing wind direction: _____

Describe the general weather conditions (e.g., sunny, cloudy, rain):

Was there any significant precipitation (0.1 inches) within 12 hours preceding the sampling event? _____

Type of ground cover (e.g., grass, pavement, etc.) outside the building: _____

General Comments

Is there any other information about the structural features of this building, the habits of its occupants or potential sources of chemical contaminants to the indoor air that may be of importance in facilitating the evaluation of the indoor air quality of the building?

Source: MaDEP, 2002, "Indoor Air Sampling and Evaluation Guide, WSC Policy #02-430", Office of Research and Standards, Massachusetts Department of Environmental Protection, April, 2002.

ARCADIS

Chemical Inventory - 26/05/05 - South

Quantity	Size	Name	Ingredient(s)	Notes
Basement				
		Laundry Detergent		
		Febreze		
		Lysol Disinfectant Bathroom Spray		
		Arm & Hammer Scrub Free		
		Easy-off Oven Cleaner - Reckitt Banckiser		
		Kiwi Leather Care		
		Windex		
		bleach		
		Raid Flying Insect Spray		
		Lysol Wipes		
		Raid Ant & Roach		
		Glade Carpet & Room Powder		
		Woolite		
		Oust Air Sanitizer		
		Clorox Clean-up		
		Rug Doctor Oxy-Steam Carpet Cleaner		
		Soft Scrup		
		Pledge		
		Fantastik		
		Mr. Clean Spray		
		Glass Plus		
		Big Sexy Hair Spray		
		fabric softener sheets		
		Shout Gel		
		isopropyl alcohol		
		instant spray starch		

OUST® AIR SANITIZER - FRAGRANCE FREE

Date Issued: 09Mar2007 **Supersedes: 14Apr2003**

US MANUFACTURER:
S.C. Johnson & Son, Inc.
Phone: (800) 725-6737
Racine, Wisconsin 53403-2236
Emergency Phone: (866) 231-5406
International Emergency Phone:
(952) 852-4647

CANADIAN MANUFACTURER:
S.C. Johnson and Son, Limited
Phone: (800) 725-6737
1 Webster Street
Brantford, Ontario N3T 5R1
Transportation Emergency:
CANUTEC (collect) (613) 996-6666
Poison Control: (866) 231-5406

HAZARD RATING	HMIS	HAZARD	NFPA
4-Very High	2	Health	2
3-High	4	Flammability	4
2-Moderate	0	Reactivity	0
1-Slight		Special	
0-Insignificant			

DISTRIBUTED IN CANADA BY:
S.C. Johnson and Son, Limited
Phone: (800) 725-6737
1 Webster Street
Brantford, Ontario N3T 5R1

SECTION 1 - PRODUCT IDENTIFICATION

PRODUCT NAME..... OUST® AIR SANITIZER - FRAGRANCE FREE
REASON FOR CHANGE..... Section 2. Section 3. Section 4. Section 5. Section 6. Section 7. Section 8. Section 10. Section 11. Section 13.
PRODUCT USE..... Household: Sanitizer

SECTION 2 - INGREDIENT INFORMATION

INGREDIENT	WEIGHT%	EXPOSURE LIMIT/TOXICITY
Triethylene glycol (CAS# 112-27-6).....	6.0	NOT ESTABLISHED
Isobutane (CAS# 75-28-5).....	7-13	NOT ESTABLISHED
Propane (CAS# 74-98-6).....	7-13	1000 ppm OSHA PEL , 2500 ppm ACGIH TWA
Butane (CAS# 106-97-8).....	10-20	800 ppm ACGIH/OSHA TWA
Ethyl alcohol (CAS# 64-17-5).....	50-70	1000 ppm ACGIH/OSHA TWA

SECTION 3 - HEALTH HAZARDS IDENTIFICATION (Also See Section 11)

ROUTE(S) OF ENTRY..... Eye contact. Skin contact. Ingestion. Inhalation.
EFFECTS OF ACUTE EXPOSURE:
EYE..... May cause: Moderate eye irritation.
SKIN..... Prolonged or repeated contact may cause: Drying/defatting of skin.
INHALATION..... Prolonged or repeated contact may cause: Irritation to nose, throat and respiratory tract. Central nervous system depression.
INGESTION..... May cause: Irritation to nose, throat and respiratory tract. Central nervous system depression.
MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE..... Individuals with chronic respiratory disorders such as asthma, chronic bronchitis, emphysema, etc., may be more susceptible to irritating effects.

SECTION 4 - FIRST AID MEASURES

EYE CONTACT..... Flush immediately with plenty of water for at least 15 to 20 minutes. If irritation persists, get medical attention.

OUST® AIR SANITIZER - FRAGRANCE FREE

Date Issued: 09Mar2007 **Supersedes: 14Apr2003**

SECTION 4 - FIRST AID MEASURES (continued)

SKIN CONTACT.....	Wash contaminated area with water and soap. If irritation develops, get medical attention.
INHALATION.....	Remove to fresh air. If breathing is affected, get medical attention.
INGESTION.....	Immediately drink 1-2 glasses of water. Do not induce vomiting! Do not administer anything by mouth to an unconscious person. Get medical attention immediately.

SECTION 5 - FIRE AND EXPLOSION INFORMATION

FLASH POINT.....	< 20°F (< -7°C) (TCC) (propellant)
FLAMMABLE LIMITS.....	Not available.
AUTOIGNITION..... TEMPERATURE	Not available.
EXTINGUISHING MEDIA....	Foam. CO2. Dry chemical. Water fog.
SPECIAL FIREFIGHTING... PROCEDURES	Fight fire from maximum distance or protected area. Cool and use caution when approaching or handling fire-exposed containers. Fire fighters should wear self-contained breathing apparatus and protective clothing.
UNUSUAL FIRE AND..... EXPLOSION HAZARDS	Aerosol product - Containers may rocket or explode in heat of fire.

SECTION 6 - PREVENTIVE RELEASE MEASURES

STEPS TO BE TAKEN IN... CASE MATERIAL IS RELEASED OR SPILLED	Eliminate all ignition sources. Dike large spills. Absorb with oil-dri or similar inert material. Sweep or scrape up and containerize. Rinse affected area thoroughly with water.

SECTION 7 - HANDLING AND STORAGE

PRECAUTIONARY..... INFORMATION	CAUTION: CONTENTS UNDER PRESSURE. Do not puncture or incinerate. Exposure to temperatures above 120 F may cause bursting. MAY CAUSE EYE IRRITATION. Avoid contact with skin, eyes and clothing. KEEP OUT OF REACH OF CHILDREN.
OTHER HANDLING AND..... STORAGE CONDITIONS	Observe good personal hygiene practices. Wash thoroughly after handling. Keep from freezing.

SECTION 8 - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION.	No special requirements under normal use conditions. If mists/vapors are not adequately controlled by ventilation, use appropriate respiratory protection to prevent overexposure.
VENTILATION.....	General room ventilation is normally adequate. Substantial amounts of mists/vapors can be controlled with local exhaust ventilation or respiratory protection.
PROTECTIVE GLOVES.....	No special requirements under normal use conditions.
EYE PROTECTION.....	No special requirements under normal use conditions.
OTHER PROTECTIVE..... MEASURES	If major exposure is possible to eyes/skin, wear/use appropriate protective equipment.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

COLOR.....	Clear, Colorless

OUST® AIR SANITIZER - FRAGRANCE FREE

Date Issued: 09Mar2007 **Supersedes: 14Apr2003**

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES (continued)

PRODUCT STATE.....	Dispensed as a spray mist.
ODOR.....	Alcohol
pH.....	Not available.
ODOR THRESHOLD.....	Not available.
SOLUBILITY IN WATER....	Dispersible
SPECIFIC GRAVITY..... (H2O=1)	0.72
VAPOR DENSITY (AIR=1)..	Not available.
EVAPORATION RATE (BUTYL ACETATE=1)	Not available.
VAPOR PRESSURE (mm HG).	44.6 mm Hg
BOILING POINT.....	78.5°C (173°F)
FREEZING POINT.....	< 0°C (< 32°F)
COEFFICIENT OF..... WATER/OIL	Not available.
PERCENT VOLATILE BY.... VOLUME (%)	> 94
VOLATILE ORGANIC..... COMPOUND (VOC)	Hydrocarbon Propellant. Ethanol.
THEORETICAL VOC..... (LB/GAL)	Not available.

SECTION 10 - STABILITY AND REACTIVITY

STABILITY.....	Stable
STABILITY - CONDITIONS. TO AVOID	Excessive heat.
INCOMPATIBILITY.....	Avoid contact with: Strong oxidizing materials (e.g. liquid chlorine).
HAZARDOUS DECOMPOSITION PRODUCTS	When exposed to fire: Produces normal products of combustion.
HAZARDOUS..... POLYMERIZATION	Will not occur.
HAZARDOUS..... POLYMERIZATION - CONDITIONS TO AVOID	None known.

SECTION 11 - TOXICOLOGY INFORMATION (Also See Section 3)

LD50 (ACUTE ORAL TOX)..	5000 mg/kg (rat)
LD50 (ACUTE DERMAL TOX)	> 2000 mg/kg (rabbit)
LC50 (ACUTE INHALATION. TOX)	> 5 mg/L (rat)
EFFECTS OF CHRONIC..... EXPOSURE	None known.
SENSITIZATION.....	None known.
CARCINOGENICITY.....	None known.
REPRODUCTIVE TOXICITY..	None known.
TERATOGENICITY.....	None known.
MUTAGENICITY.....	None known.

OUST® AIR SANITIZER - FRAGRANCE FREE

Date Issued: 09Mar2007 **Supersedes: 14Apr2003**

SECTION 12 - ECOLOGICAL INFORMATION

ENVIRONMENTAL DATA..... Not available.

SECTION 13 - DISPOSAL CONSIDERATIONS

WASTE DISPOSAL..... PESTICIDAL WASTE - Observe all applicable Federal/ Provincial/ State regulations and Local/ Municipal ordinances regarding disposal of pesticide wastes. If possible, recycle empty aerosol can to nearest steel recycling center. Use up package or give to someone who can.
INFORMATION

SECTION 14 - TRANSPORTATION INFORMATION

US DOT INFORMATION..... Please refer to the Bill of Lading/receiving documents for up-to-date shipping information.
CANADIAN SHIPPING NAME. OUST® AIR SANITIZER - FRAGRANCE FREE
TDG CLASSIFICATION..... Not applicable.
PIN/NIP..... Not applicable.
PACKING GROUP..... Not applicable.
EXEMPTION NAME..... Not applicable.

SECTION 15 - REGULATORY INFORMATION

WHMIS CLASSIFICATION... Not applicable.

All ingredients of this product are listed or are excluded from listing on the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.

All ingredients in this product comply with the New Substances Notification requirements under the Canadian Environmental Protection Act (CEPA).

This product is not subject to the reporting requirements under California's Proposition 65.

SECTION 16 - OTHER INFORMATION

ADDITIONAL INFORMATION. NFPA 30B Level 3 Aerosol.
EPA REGISTRATION #..... 4822-293

PREPARATION INFORMATION

PREPARED BY..... Manufacturer's Technical Support Department. Refer to page 1 (Manufacturer) for contact information.

PRINT DATE: 09Mar2007

SHOUT® ACTION GEL

Date Issued: 18Aug2006 **Supersedes: 10Jun2005**

US MANUFACTURER:
S.C. Johnson & Son, Inc.
Phone: (800) 725-6737
Racine, Wisconsin 53403-2236
Emergency Phone: (866) 231-5406
International Emergency Phone:
(952) 852-4647

CANADIAN MANUFACTURER:
S.C. Johnson and Son, Limited
Phone: (800) 725-6737
1 Webster Street
Brantford, Ontario N3T 5R1
Transportation Emergency:
CANUTEC (collect) (613) 996-6666
Poison Control: (866) 231-5406

HAZARD RATING	HMIS	HAZARD	NFPA
4-Very High	1	Health	1
3-High	0	Flammability	0
2-Moderate	0	Reactivity	0
1-Slight		Special	
0-Insignificant			

DISTRIBUTED IN CANADA BY:
S.C. Johnson and Son, Limited
Phone: (800) 725-6737
1 Webster Street
Brantford, Ontario N3T 5R1

SECTION 1 - PRODUCT IDENTIFICATION

PRODUCT NAME..... SHOUT® ACTION GEL
REASON FOR CHANGE..... No significant changes.
PRODUCT USE..... Home care Cleaning product

SECTION 2 - INGREDIENT INFORMATION

INGREDIENT	WEIGHT%	EXPOSURE LIMIT/TOXICITY
Enzyme	<1.0	Not determined
Citric acid	0.5-1.5	NOT ESTABLISHED
Surfactants	10-20	NOT ESTABLISHED
Water (CAS# 7732-18-5)	85-95	NOT ESTABLISHED

SECTION 3 - HEALTH HAZARDS IDENTIFICATION (Also See Section 11)

ROUTE(S) OF ENTRY..... Eye contact. Skin contact.
EFFECTS OF ACUTE EXPOSURE:
EYE..... Prolonged or repeated contact may cause: Mild eye irritation.
SKIN..... Prolonged or repeated contact may cause: Mild skin irritation.
INHALATION..... None known.
INGESTION..... None known.
MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE..... Persons with pre-existing sensitivity to enzymes may be more susceptible to allergic reaction.

SECTION 4 - FIRST AID MEASURES

EYE CONTACT..... Flush immediately with plenty of water for at least 15 to 20 minutes. If irritation persists, get medical attention.
SKIN CONTACT..... Rinse with plenty of water. If irritation develops, get medical attention.
INHALATION..... No special requirements.
INGESTION..... Seek immediate medical attention. Contact nearest Poison Control Center or physician to determine whether to induce vomiting.

SECTION 5 - FIRE AND EXPLOSION INFORMATION

FLASH POINT..... Not applicable.

SHOUT® ACTION GEL

Date Issued: 18Aug2006 **Supersedes: 10Jun2005**

SECTION 5 - FIRE AND EXPLOSION INFORMATION (continued)

FLAMMABLE LIMITS.....	Not applicable.
AUTOIGNITION..... TEMPERATURE	Not applicable.
EXTINGUISHING MEDIA....	Foam. CO2. Dry chemical. Water fog.
SPECIAL FIREFIGHTING... PROCEDURES	Normal fire fighting procedure may be used.
UNUSUAL FIRE AND..... EXPLOSION HAZARDS	Container may melt and leak in heat of fire.

SECTION 6 - PREVENTIVE RELEASE MEASURES

STEPS TO BE TAKEN IN... CASE MATERIAL IS RELEASED OR SPILLED	Dike large spills. Absorb with oil-dri or similar inert material. Sweep or scrape up and containerize.

SECTION 7 - HANDLING AND STORAGE

PRECAUTIONARY..... INFORMATION	May be: Eye irritant. Avoid contact with eyes. If such contact occurs, flush immediately with plenty of water for at least 15 to 20 minutes. If irritation persists, seek medical aid. Keep out of reach of children.
OTHER HANDLING AND..... STORAGE CONDITIONS	Wash thoroughly after handling. Keep from freezing.

SECTION 8 - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION.	No special requirements under normal use conditions.
VENTILATION.....	No special requirements.
PROTECTIVE GLOVES.....	No special requirements under normal use conditions.
EYE PROTECTION.....	No special requirements under normal use conditions.
OTHER PROTECTIVE..... MEASURES	No special requirements.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

COLOR.....	Translucent White
PRODUCT STATE.....	Liquid.
ODOR.....	Lemon
pH.....	7.0-7.9
ODOR THRESHOLD.....	Not available.
SOLUBILITY IN WATER....	Complete
SPECIFIC GRAVITY..... (H2O=1)	> 1.00
VAPOR DENSITY (AIR=1)..	Not available.
EVAPORATION RATE (BUTYL ACETATE=1)	Not available.
VAPOR PRESSURE (mm HG).	Not available.
BOILING POINT.....	> 212°F (> 100°C)
FREEZING POINT.....	< 32°F (< 0°C)
COEFFICIENT OF..... WATER/OIL	Not available.
PERCENT VOLATILE BY.... VOLUME (%)	> 95
VOLATILE ORGANIC..... COMPOUND (VOC)	Not applicable.

SHOUT® ACTION GEL

Date Issued: 18Aug2006 **Supersedes: 10Jun2005**

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES (continued)

THEORETICAL VOC (LB/GAL)	< 0.5

SECTION 10 - STABILITY AND REACTIVITY

STABILITY	Stable
STABILITY - CONDITIONS TO AVOID	Not applicable.
INCOMPATIBILITY	Do not mix with any other chemicals or products unless specified by label.
HAZARDOUS DECOMPOSITION PRODUCTS	When exposed to fire: Produces normal products of combustion.
HAZARDOUS POLYMERIZATION	Will not occur.
HAZARDOUS POLYMERIZATION - CONDITIONS TO AVOID	Not applicable.

SECTION 11 - TOXICOLOGY INFORMATION (Also See Section 3)

LD50 (ACUTE ORAL TOX)	Estimated to be greater than 5000 mg/kg (rats).
LD50 (ACUTE DERMAL TOX)	Estimated to be greater than 2000 mg/kg.
LC50 (ACUTE INHALATION. TOX)	Not available.
EFFECTS OF CHRONIC EXPOSURE	None known.
SENSITIZATION	None known.
CARCINOGENICITY	None known.
REPRODUCTIVE TOXICITY	None known.
TERATOGENICITY	None known.
MUTAGENICITY	None known.

SECTION 12 - ECOLOGICAL INFORMATION

ENVIRONMENTAL DATA	Contains readily biodegradable surfactants.

SECTION 13 - DISPOSAL CONSIDERATIONS

WASTE DISPOSAL INFORMATION	Waste from normal product use may be sewered to a public-owned treatment works (POTW) in compliance with applicable Federal/ Provincial/ State/ Local/ Municipal pretreatment requirements.

SECTION 14 - TRANSPORTATION INFORMATION

US DOT INFORMATION	Please refer to the Bill of Lading/receiving documents for up-to-date shipping information.
CANADIAN SHIPPING NAME	SHOUT® ACTION GEL
TDG CLASSIFICATION	Non-regulated.
PIN/NIP	Not applicable.
PACKING GROUP	Not applicable.
EXEMPTION NAME	Not applicable.

SECTION 15 - REGULATORY INFORMATION

WHMIS CLASSIFICATION	Not applicable.

SHOUT® ACTION GEL

Date Issued: 18Aug2006 **Supersedes: 10Jun2005**

SECTION 15 - REGULATORY INFORMATION (continued)

All ingredients of this product are listed or are excluded from listing on the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.

All ingredients in this product comply with the New Substances Notification requirements under the Canadian Environmental Protection Act (CEPA).

This product is not subject to the reporting requirements under California's Proposition 65.

SECTION 16 - OTHER INFORMATION

ADDITIONAL INFORMATION. Use as directed.
EPA REGISTRATION #..... Not applicable.

PREPARATION INFORMATION

PREPARED BY..... Manufacturer's Technical Support Department. Refer to page 1 (Manufacturer) for contact information.

PRINT DATE: 18Aug2006

Material Safety Data Sheet

according to ANSI Z400.1- 2004 and 29 CFR 1910.1200

WINDEX® CRYSTAL RAIN™

Version *1.*

Print Date 02/27/2009

Revision Date 02/23/2009

MSDS Number 350000004948

1. PRODUCT AND COMPANY IDENTIFICATION

Product information

Trade name	:	WINDEX® CRYSTAL RAIN™
Use of the Substance/Preparation	:	Hard Surface Cleaner
Company	:	S.C. Johnson & Son, Inc. 1525 Howe Street Racine WI 53403-2236
Emergency telephone	:	24 Hour Transport & Medical Emergency Phone (866) 231-5406 24 Hour International Emergency Phone (952) 852-4647

2. HAZARDS IDENTIFICATION

Emergency Overview

Appearance / Odor	:	blue / liquid / pleasant
Immediate Concerns	:	Avoid contact with skin, eyes and clothing.

Potential Health Effects

Routes of exposure	:	Eye, Skin, Inhalation, Ingestion.
Eyes	:	No adverse effects expected when used as directed.
Skin	:	No adverse effects expected when used as directed.
Inhalation	:	No adverse effects expected when used as directed.
Ingestion	:	No adverse effects expected when used as directed.
Aggravated Medical Condition	:	None known.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No.	Weight %
Water	7732-18-5	60.00 - 100.00
Isopropanol	67-63-0	1.00 - 5.00
Ethyleneglycol Monohexylether	112-25-4	0.10 - 1.00

4. FIRST AID MEASURES

Eye contact	:	Rinse with plenty of water. Get medical attention if irritation

develops and persists.

Skin contact	:	Wash off with soap and water. Get medical attention if irritation develops and persists.
Inhalation	:	Remove to fresh air.
Ingestion	:	Never give anything by mouth to an unconscious person. Get medical attention immediately.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	:	Alcohol foam, carbon dioxide, dry chemical, water fog
Specific hazards during fire fighting	:	Container may melt and leak in heat of fire.
Further information	:	Although this product has a flash point below 200 Deg F, it is an aqueous solution containing an alcohol and does not sustain combustion. Standard procedure for chemical fires. Wear full protective clothing and positive pressure self-contained breathing apparatus.
Flash point	:	estimated134 °F Method: Tag Closed Cup (TCC)
Flash point	:	estimated57 °C Method: Tag Closed Cup (TCC)
Lower explosion limit	:	Note: no data available
Upper explosion limit	:	Note: no data available

6. ACCIDENTAL RELEASE MEASURES

Personal precautions	:	Remove all sources of ignition.
Methods for cleaning up	:	Soak up with inert absorbent material. Sweep up and shovel into suitable containers for disposal. Dike large spills.

7. HANDLING AND STORAGE

Handling

Advice on safe handling	:	KEEP OUT OF REACH OF CHILDREN AND PETS.

Use only as directed.

Advice on protection against fire and explosion : Keep away from heat and sources of ignition.

Storage

Requirements for storage areas and containers : Keep container closed when not in use.
Keep in a dry, cool and well-ventilated place.
Do not freeze.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits

Components	CAS-No.	mg/m3	ppm	Basis
Isopropanol	67-63-0	-	400 ppm	ACGIH STEL
Isopropanol	67-63-0	-	200 ppm	ACGIH TWA
Isopropanol	67-63-0	980 mg/m3	400 ppm	OSHA TWA

Personal protective equipment

Respiratory protection

Industrial setting : No personal respiratory protective equipment normally required.

Household setting : No personal respiratory protective equipment normally required.

Hand protection

Industrial setting : not required under normal use

Household setting : not required under normal use

Eye protection

Industrial setting : No special requirements.

Household setting : No special requirements.

Hygiene measures : Use only with adequate ventilation. Wash thoroughly after handling. Substantial amounts of mist/vapors can be controlled with local exhaust ventilation or respiratory protection. Wear suitable protective clothing.

WINDEX® CRYSTAL RAIN™

Version *1.*
Print Date 02/27/2009
Revision Date 02/23/2009
MSDS Number 350000004948

9. PHYSICAL AND CHEMICAL PROPERTIES

Form	:	liquid
Color	:	blue
Odor	:	pleasant
pH	:	10.5 - 11.5
Boiling point	:	no data available
Freezing point	:	no data available
Flash point	:	estimated134 °F Method: Tag Closed Cup (TCC)
Flash point	:	estimated57 °C Method: Tag Closed Cup (TCC)
Evaporation rate	:	no data available
Autoignition temperature	:	no data available
Lower explosion limit	:	no data available
Upper explosion limit	:	no data available
Vapour pressure	:	similar to water
Water solubility	:	completely soluble
Partition coefficient: n-octanol/water	:	no data available
Specific Gravity	:	1.00 estimated
Percent volatile	:	not determined

10. STABILITY AND REACTIVITY

Conditions to avoid	:	None known.
Materials to avoid	:	Strong oxidizing agents
Hazardous decomposition products	:	When exposed to fire, produces normal products of combustion.

WINDEX® CRYSTAL RAIN™

Version *1.*
Print Date 02/27/2009
Revision Date 02/23/2009
MSDS Number 350000004948

Hazardous reactions	:	Stable

11. TOXICOLOGICAL INFORMATION

Acute oral toxicity	:	LD50 rat Dose: > 5,000 mg/kg
Acute inhalation toxicity	:	LC50 rat Dose: 2.58 mg/l
Acute dermal toxicity	:	LD50 rabbit Dose: 5,000 mg/kg

Chronic effects

Carcinogenicity	:	no data available
Mutagenicity	:	no data available
Reproductive effects	:	no data available
Teratogenicity	:	no data available
Sensitisation	:	Not known to be a sensitizer.

12. ECOLOGICAL INFORMATION

Ecotoxicity effects	:	Not Available

13. DISPOSAL CONSIDERATIONS

Industrial setting	:	Observe all applicable Federal, Provincial and State regulations and Local/Municipal ordinances regarding disposal.
Household setting	:	Consumer may discard empty container in trash, or recycle where facilities exist.

14. TRANSPORT INFORMATION

Land transport

U.S. DOT and Canadian TDG Surface Transportation:

NA number	1993
Proper shipping name	Combustible Liquid, N.O.S.
Class:	Combustible liquid
Packaging group:	III
Note:	SC Johnson ships this product as "Non-Regulated" per DOT exception for Combustible Liquids. (49 CFR 173.150)

Sea transport

IMDG:

UN-Number:	None.
Packaging group:	None.
Proper shipping name	not regulated
Class:	None.

Air transport

ICAO/IATA:

Class:	None.
Packaging group:	None.
Proper shipping name	not regulated
UN/ID No.:	None.

15. REGULATORY INFORMATION

Global Chemical Inventories

Notification status	:	All ingredients of this product are listed or are excluded from listing on the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.
California Prop. 65	:	This product is not subject to the reporting requirements under California's Proposition 65.

16. OTHER INFORMATION

HMIS Ratings

Health	0

WINDEX® CRYSTAL RAIN™

Version *1.*
Print Date 02/27/2009
Revision Date 02/23/2009
MSDS Number 350000004948

Flammability	2
Reactivity	0

NFPA Ratings

Health	0
Fire	2
Reactivity	0
Special	

Further information

This document has been prepared using data from sources considered to be technically reliable. It does not constitute a warranty, expressed or implied, as to the accuracy of the information contained herein. Actual conditions of use are beyond the seller's control. User is responsible to evaluate all available information when using product for any particular use and to comply with all Federal, State, Provincial and Local laws and regulations.

Prepared by:	SC Johnson Global Safety Assessment & Regulatory Affairs (GSARA)

Material Safety Data Sheet

according to ANSI Z400.1- 2004 and 29 CFR 1910.1200

RAID® ANT & ROACH KILLER 17 - LEMON SCENT

Version *1*.

Print Date 01/19/2009

Revision Date 12/05/2008

MSDS Number 350000011476

1. PRODUCT AND COMPANY IDENTIFICATION

Product information

Trade name	:	RAID® ANT & ROACH KILLER 17 - LEMON SCENT
Use of the Substance/Preparation	:	Insecticide
Company	:	S.C. Johnson & Son, Inc. 1525 Howe Street Racine WI 53403-2236
Emergency telephone	:	24 Hour Transport & Medical Emergency Phone (866) 231-5406 24 Hour International Emergency Phone (952) 852-4647

2. HAZARDS IDENTIFICATION

Emergency Overview

Appearance / Odor	:	clear / aerosol / pleasant
Immediate Concerns	:	Caution CONTENTS UNDER PRESSURE. Do not puncture or incinerate. Do not store at temperatures above 120 Deg. F (50 Deg C), as container may burst. Keep away from heat, sparks and flame. Avoid contact with skin, eyes and clothing. Avoid breathing vapors, mist or gas.

Potential Health Effects

Routes of exposure	:	Eye, Skin, Inhalation, Ingestion.
Eyes	:	May cause: Mild eye irritation
Skin	:	Moderate skin irritant Prolonged or repeated contact may dry skin and cause irritation.
Inhalation	:	Excessive exposures may affect human health, as follows: May cause nose, throat, and lung irritation. Inhalation may cause central nervous system effects.
Ingestion	:	Harmful if swallowed. Aspiration hazard if swallowed - can enter lungs and cause damage.
Aggravated Medical Condition	:	Persons with pre-existing skin disorders may be more susceptible to irritating effects.

RAID® ANT & ROACH KILLER 17 - LEMON SCENT

Version *1.*
Print Date 01/19/2009

Revision Date 12/05/2008
MSDS Number 350000011476

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No.	Weight %
Water	7732-18-5	40.00 - 70.00
Tetradecane	629-59-4	10.00 - 30.00
Pentadecane	629-62-9	3.00 - 7.00
Isobutane	75-28-5	3.00 - 7.00
Propane	74-98-6	1.00 - 5.00
Isopropanol	67-63-0	1.00 - 5.00
Imiprothrin	72963-72-5	0.10
Cis-,Trans-Cypermethrin	52315-07-8	0.10

4. FIRST AID MEASURES

Eye contact : Flush immediately with plenty of water for at least 15 to 20 minutes. Get medical attention if irritation develops and persists.

Skin contact : Wash off with soap and water. Get medical attention if irritation develops and persists.

Inhalation : Remove to fresh air. If breathing is affected, get medical attention.

Ingestion : If swallowed, DO NOT induce vomiting unless directed to do so by medical personnel. Get medical attention immediately.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media : Alcohol foam, carbon dioxide, dry chemical, water fog

Specific hazards during fire fighting : Aerosol Product - Containers may rocket or explode in heat of fire.

Further information : Cool and use caution when approaching or handling fire-exposed containers. Fight fire from maximum distance or protected area. Wear full protective clothing and positive pressure self-contained breathing apparatus.

Flash point : < 20 °F
Note: Propellant

Flash point : < -7 °C
Note: Propellant

Lower explosion limit	:	Note: no data available
Upper explosion limit	:	Note: no data available
NFPA Classification	:	NFPA Level 1 Aerosol

6. ACCIDENTAL RELEASE MEASURES

Personal precautions	:	Remove all sources of ignition.
Environmental precautions	:	Use appropriate containment to avoid environmental contamination. Do not flush into surface water or sanitary sewer system.
Methods for cleaning up	:	Soak up with inert absorbent material. Sweep up and shovel into suitable containers for disposal. Dike large spills.

7. HANDLING AND STORAGE

Handling

Advice on safe handling	:	Use only as directed. KEEP OUT OF REACH OF CHILDREN AND PETS. Avoid contact with skin, eyes and clothing. Avoid breathing vapors, mist or gas.
Advice on protection against fire and explosion	:	Keep away from heat and sources of ignition.

Storage

Requirements for storage areas and containers	:	Keep in a dry, cool and well-ventilated place. Do not store at temperatures above 120 Deg. F (50 Deg C), as container may burst.

RAID® ANT & ROACH KILLER 17 - LEMON SCENT

Version *1.*
Print Date 01/19/2009
Revision Date 12/05/2008
MSDS Number 350000011476

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits

Components	CAS-No.	mg/m3	ppm	Basis
Isobutane	75-28-5	-	1,000 ppm	ACGIH TWA
Propane	74-98-6	-	1,000 ppm	ACGIH TWA
Propane	74-98-6	1,800 mg/m3	1,000 ppm	OSHA TWA
Isopropanol	67-63-0	-	400 ppm	ACGIH STEL
Isopropanol	67-63-0	-	200 ppm	ACGIH TWA
Isopropanol	67-63-0	980 mg/m3	400 ppm	OSHA TWA

Personal protective equipment

Respiratory protection

Industrial setting : Substantial amounts of mist/vapors can be controlled with local exhaust ventilation or respiratory protection.

Household setting : No personal respiratory protective equipment normally required.

Hand protection

Industrial setting : For prolonged or repeated contact use protective gloves.

Household setting : not required under normal use

Eye protection

Industrial setting : No special requirements.

Household setting : No special requirements.

Hygiene measures : Use only with adequate ventilation. Wash thoroughly after handling. Wear suitable protective clothing. Keep away from food, drink and animal feedingstuffs.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form : aerosol

RAID® ANT & ROACH KILLER 17 - LEMON SCENT

Version *1.*
Print Date 01/19/2009
Revision Date 12/05/2008
MSDS Number 350000011476

Color	:	clear
Odor	:	pleasant
pH	:	no data available
Melting point	:	no data available
Boiling point	:	no data available
Freezing point	:	no data available
Flash point	:	< 20 °F Propellant
Flash point	:	< -7 °C Propellant
Evaporation rate	:	no data available
Autoignition temperature	:	no data available
Lower explosion limit	:	no data available
Upper explosion limit	:	no data available
Vapour pressure	:	no data available
Density	:	0.877 g/cm3 at 70 °F
Water solubility	:	partly soluble
Partition coefficient: n-octanol/water	:	no data available
Specific Gravity	:	no data available

10. STABILITY AND REACTIVITY

Conditions to avoid	:	Heat, flames and sparks.
Materials to avoid	:	Do not mix with oxidizing agents.
Hazardous decomposition products	:	When exposed to fire, produces normal products of combustion.
Hazardous reactions	:	Stable

RAID® ANT & ROACH KILLER 17 - LEMON SCENT

Version *1*.
Print Date 01/19/2009
Revision Date 12/05/2008
MSDS Number 350000011476

11. TOXICOLOGICAL INFORMATION

Acute oral toxicity	:	LD50 rat Dose: estimated > 5,000 mg/kg
Acute inhalation toxicity	:	LC50 rat Dose: > 5.1 mg/l
Acute dermal toxicity	:	LD50 rabbit Dose: estimated > 5,000 mg/kg

Chronic effects

Carcinogenicity	:	no data available
Mutagenicity	:	no data available
Reproductive effects	:	no data available
Teratogenicity	:	no data available
Sensitisation	:	Not known to be a sensitizer.

12. ECOLOGICAL INFORMATION

Ecotoxicity effects : Harmful to aquatic organisms.

13. DISPOSAL CONSIDERATIONS

Industrial setting	:	PESTICIDAL WASTE: Observe all applicable Federal, Provincial and State regulations and Local/Municipal ordinances regarding disposal.
Household setting	:	Dispose of in accordance with local regulations.

14. TRANSPORT INFORMATION

Land transport

U.S. DOT and Canadian TDG Surface Transportation:

UN-Number	1950
Proper shipping name	Aerosols, flammable

Class:	2.1
Packaging group:	None.
Note:	SC Johnson ships this product as Consumer Commodity ORM-D (non-bulk packages)

Sea transport

IMDG:

Class:	2.1
Packaging group:	None.
Proper shipping name	Aerosols, flammable
UN-Number:	1950
Note:	SC Johnson ships this product as "Limited Quantity" when the container quantity value is 1 Liter or less.

Air transport

ICAO/IATA:

Class:	2.1
Packaging group:	None.
Proper shipping name	Aerosols, flammable
UN/ID No.:	UN 1950
Note:	SC Johnson typically does not ship products via air, therefore it has not been determined if the product container meets current IATA/ICAO package criteria. Refer to IATA/ICAO Dangerous Goods Regulations for detailed instructions when shipping this item by air.

15. REGULATORY INFORMATION

Global Chemical Inventories

Notification status	:	All ingredients of this product are listed or are excluded from listing on the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.
California Prop. 65	:	This product is not subject to the reporting requirements under California's Proposition 65.
	:	This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products

RAID® ANT & ROACH KILLER 17 - LEMON SCENT

Version *1.*
Print Date 01/19/2009
Revision Date 12/05/2008
MSDS Number 350000011476

Regulations.

EPA Registration Number : 4822-447

16. OTHER INFORMATION

HMIS Ratings

Health	1
Flammability	4
Reactivity	0

NFPA Ratings

Health	1
Fire	4
Reactivity	0
Special	

Further information

This document has been prepared using data from sources considered to be technically reliable. It does not constitute a warranty, expressed or implied, as to the accuracy of the information contained herein. Actual conditions of use are beyond the seller's control. User is responsible to evaluate all available information when using product for any particular use and to comply with all Federal, State, Provincial and Local laws and regulations.

Prepared by:	SC Johnson Global Safety Assessment & Regulatory Affairs (GSARA)

CHURCH & DWIGHT CO., INC.

CONSUMER PRODUCTS • SPECIALTY PRODUCTS

MATERIAL SAFETY DATA SHEET

1. PRODUCT AND COMPANY IDENTIFICATION

Church & Dwight Co., Inc.
469 N. Harrison Street
Princeton, NJ 08540

Emergency Phone:
1-609-683-5900 (U.S.A.)

Medical Emergency Phone:
1-888-234-1828

Product Name

SCRUB FREE SOAP SCUM REMOVER

2. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Ingredients	% By Wt.	CAS Number
Sulfamic Acid	1 - 5	5329-14-6
(C10-C16) Dialkylamine Oxide	1 - 5	70592-80-2

Contains no other hazardous ingredients at 1% or more (0.1% for carcinogens) as listed or defined in 29 CFR 1910 Subpart Z. Contains no components that are reported to be carcinogenic by any reference source including IARC, OSHA, NTP and NIOSH.

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Clear, slightly yellow viscous liquid.
Severe eye irritant. May cause eye burns.
May cause skin irritation or burning if skin is broken.
Can react with alkaline materials or metals. Can emit toxic fumes if mixed with products containing chlorine or other sanitizing ingredients.
Not a fire hazard.

HMIS Rating	
Health	1
Fire	0
Reactivity	0

Potential Health Effects

EYE: Potential for severe irritation and burns. Effects will be minimized with immediate washing.

SKIN CONTACT: Varying severities of irritation are possible from prolonged, repeated, or occluded exposure to intact skin. May cause burning to broken or abraded skin.

INGESTION: Ingested amounts may cause irritation, burning, nausea and vomiting.

INHALATION: Inhaled mists may cause irritation to the upper respiratory tract.

4. FIRST AID MEASURES

EYES: Immediately flush eyes with a directed stream of cool water for 15 minutes, while holding eyelids apart to insure complete irrigation of all eye and lid tissues. Get immediate medical attention.

SKIN: Remove contaminated clothing, including footwear. Wash contaminated areas thoroughly with soap and water. Wash clothing before reuse. Do not reuse footwear that is contaminated on the inner surfaces. Get medical attention if irritation develops.

INHALATION: If symptoms develop, get person out of contaminated area to fresh air. Treat symptomatically and supportively. Seek medical attention if symptoms persist.

INGESTION**: If ingested, do not induce vomiting. Do not give carbonates or bicarbonates**. If the patient is conscious and can swallow, first rinse out mouth and then give one or two glasses of water to drink. **Never give anything by mouth to an unconscious person**. Get immediate medical attention.

---

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES	FLAMMABLE LIMITS
FLASHPOINT: Not combustible	LFL: Not combustible
METHOD USED: Not applicable	UFL: Not combustible

EXTINGUISHING MEDIA: Non-combustible material. Use extinguishing media appropriate for surrounding fire.
FIRE-FIGHTING INSTRUCTIONS: Use a self-contained breathing apparatus (SCBA) and full protective equipment (Bunker Gear).
UNUSUAL FIRE AND EXPLOSION HAZARDS: None known

---

6. ACCIDENTAL RELEASE MEASURES

Wear personal protective equipment (See Section 8). Close off area to traffic. Large spills should be contained, pumped into containers, or absorbed onto commercial absorbent and placed in containers for disposal. Flush residues to sewer or waste treatment system as permitted. Landfill solids according to all applicable regulations. Flush area thoroughly with water.

---

7. HANDLING AND STORAGE

Wear protective equipment when handling material to prevent skin and eye contact. Store in a cool, dry area away from incompatible substances. Keep containers closed.

---

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE LIMITS: PEL = Not established TLV = Not established
ENGINEERING CONTROLS: General ventilation should be adequate. Use local exhaust if necessary.
RESPIRATORY PROTECTION: Not normally required. Wear a NIOSH/MSHA approved mist respirator with an organic vapor/mist cartridge where spray or mist exposure occurs.
PROTECTIVE GLOVES: Impervious (rubber or neoprene) gloves where contact is likely.
EYE PROTECTION: Wear splash-proof chemical safety goggles to avoid eye contact.
OTHER PROTECTIVE CLOTHING OR EQUIPMENT: Wear impervious protective clothing where splashing may occur. Eyewash facility is recommended in work area or in close proximity.

PROTECTIVE WORK/HYGIENIC PRACTICES: No special requirements with respect to chemical exposure other than those noted above. Personal protection with respect to specific applications of this material are the responsibility of the user.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Clear, slightly yellow viscous liquid
ODOR: Slight citrus odor
PHYSICAL STATE: Liquid
pH AS IS: 1.25 – 1.75
VAPOR PRESSURE: Not determined
VAPOR DENSITY: Not determined
BOILING POINT @ 760mm Hg: Not determined
MELTING POINT: Not applicable
SOLUBILITY IN WATER % by WT: Complete
SURFACE TENSION: Not determined
SPECIFIC GRAVITY (Water = 1): 0.995 - 1.015 @ 20°C
VOLATILE ORGANIC COMPOUNDS: Contains $<3\%$ VOCs. Contains no VOC's with $\leq C_{12}$ or with VP $>$ 0.1 mm Hg @ 20°C

10. STABILITY AND REACTIVITY

CONDITIONS TO AVOID: Mix only with water. Can react violently if mixed with alkaline materials or metals. Do not mix with chlorinated or sanitizing products as toxic fumes may be released.
CHEMICAL STABILITY: Stable under normal conditions.
INCOMPATIBILITY WITH OTHER MATERIALS: Strong oxidizers; inorganic acids.
HAZARDOUS DECOMPOSITION PRODUCTS: Carbon dioxide, carbon monoxide, and oxides of potassium and nitrogen.
HAZARDOUS POLYMERIZATION: Material is not known to polymerize.

11. TOXICOLOGICAL INFORMATION

EYE EFFECTS: No specific data. Potential for moderate to severe irritation based on components and pH.
SKIN EFFECTS: No specific data. Various degrees of irritation may result from repeated or prolonged contact.
ACUTE DERMAL EFFECTS: No specific data.
ACUTE ORAL EFFECTS: No specific data. Product is expected to be slightly toxic and can be irritating and harmful if ingested.
INHALATION: No specific data. Can be irritating to mucous membranes.

12. DISPOSAL CONSIDERATIONS

Dispose of waste product in accordance with all government regulations. State and local regulations may differ from federal. Be sure to consult with state and local agencies for specific rules.

13. TRANSPORTATION INFORMATION

D.O.T. SHIPPING NAME: See product name.
D.O.T. HAZARD CLASS: Consumer Commodity ORM-D
APPLICABLE REGULATIONS: 49 CFR 172, 173.154, 173.156

14. REGULATORY INFORMATION

TSCA: The components of this product are reported in the EPA TSCA Inventory List.
OSHA: Hazardous under 29 CFR 1910.1200
CERCLA REPORTABLE QUANTITY: CERCLA requires that releases of hazardous substances to land, air or water, which are equal to or exceed the reportable quantity (RQ) be reported to the National Response Center (800-424-8802). This product contains no substances at levels that would be subject to the reporting requirements of this section.
RCRA: If this material becomes waste, it would be a hazardous waste by characteristic of corrosivity due to its pH. A waste having the characteristic of corrosivity has the EPA Hazardous Waste Number D002.
SARA TITLE III:
Section 302, Extremely Hazardous Substances: None
Section 311/312, Hazardous Categories: Immediate (acute)
Section 313, Toxic Chemicals: None

SUPERSEDES DATE: 07/31/02 REASON FOR REVISION: Add new medical emergency number.
For additional non-emergency health, safety and environmental information telephone 609.279.7705 or write:

Church & Dwight Co. Inc.
R&D Technical regulatory Affairs
469 North Harrison Street
Princeton, New Jersey 08543

The Clorox Company
1221 Broadway
Oakland, CA 94612
Tel. (510) 271-7000

Material Safety Data Sheet

I Product: CLOROX CLEAN-UP CLEANER WITH BLEACH - SPRAY FORMULA

Description: CLEAR, FAINT YELLOW LIQUID WITH CHARACTERISTIC BLEACH ODOR

Other Designations	Distributor	Emergency Telephone Nos.
Clorox Clean-Up Clean-Up dilutable Clorox Clean-Up Cleaner with Bleach	Clorox Sales Company 1221 Broadway Oakland, CA 94612	For Medical Emergencies call: (800) 446-1014 For Transportation Emergencies Chemtrac (800) 424-9300

II Health Hazard Data

Moderate eye irritant. Mild to moderate skin irritant. Occasional clinical reports suggest a low potential for skin sensitization upon exaggerated exposure to sodium hypochlorite if skin damage (e.g., irritation) occurs during exposure. Routine clinical tests conducted on intact skin with this product found no sensitization in the test subjects. Exposure to vapor or mist may irritate eyes, nose, throat, lungs. Harmful if swallowed. May cause nausea and vomiting if swallowed. The following medical conditions may be aggravated by exposure to high concentrations of vapor or mist: heart conditions or chronic respiratory problems such as asthma, emphysema, chronic bronchitis or obstructive lung disease. Under normal consumer-use conditions, the likelihood of any adverse health effects is low.
FIRST AID:

EYE CONTACT: Remove any contact lenses, and flush eyes thoroughly with water for 15 minutes. If irritation persists, call a physician.

SKIN CONTACT: Remove contaminated clothing; wash affected skin with water.

IF BREATHING IS AFFECTED: Get fresh air immediately.

IF SWALLOWED: Drink a glass of water. Call a physician.

III Hazardous Ingredients

Ingredient	Concentration	Worker Exposure Limit
Sodium hypochlorite CAS #7681-52-9	1-5%	none established
Sodium hydroxide CAS #1310-73-2	0.5-2%	2 mg/m^3, Ceiling-TLV 2 mg/m^3, Ceiling- Federal OSHA PEL

TLV = Threshold Limit Value Source: ACGIH 1992-1993
PEL = Permissible Exposure Limit Source: OSHA

None of the ingredients in this product are on the IARC, OSHA or NTP carcinogen lists.

IV Special Protection and Precautions

Hygienic Practices: Do not get in eyes or on clothing. Avoid prolonged or repeated skin contact. Avoid prolonged breathing of vapor. Use only in well-ventilated areas.

Personal Protection: Wear safety glasses. For sensitive skin or repeated/prolonged use, wear gloves.

Ventilation: Use general ventilation to minimize exposure to gases or aerosols associated with this product.

V Transportation and Regulatory Data

U.S. DOT Hazard Class: Not restricted

U.S. DOT Proper Shipping Name: compound cleaning liquid

EPA CERCLA/SARA TITLE III: This product contains no chemicals regulated under Section 313 and contains sodium hydroxide (CAS# 1310-73-2, <1%) which is regulated under Section 304/CERCLA. Packaged product may be regulated under Sections 311/312 of SARA Title III.

TSCA - All chemicals in this product are listed on the TSCA Inventory

VI Spill Procedures/Waste Disposal

Spill Procedures: Absorb and containerize. Wash down residual to sanitary sewer. Contact the sanitary treatment facility in advance to assure ability to process washed-down material.

Waste Disposal: Dispose of in accordance with all applicable federal, state, and local regulations.

VII Reactivity Data

Stable under normal use and storage conditions. Strong oxidizing agent. Reacts with other household chemicals such as toilet bowl cleaners, rust removers, acids or ammonia-containing products to produce hazardous gases, such as chlorine and other chlorinated compounds. Prolonged contact with metal or old porcelain may cause pitting or discoloration.

VIII Fire and Explosion Data

Flashpoint: greater than 200°F
Fire Extinguishing Agents: Water spray, dry chemical or carbon dioxide (CO_2).
Special Fire-Fighting Procedures: None
Unusual Fire and Explosion Hazards: None

IX Physical Data

Appearance: .....Clear, faint yellow liquid
Odor:.....Characteristic bleach odor
pH: ..... 12.4 - 12.8
Solubility in water:..... Completely soluble
Specific gravity (water = 1): ..... 1.034 at 25 °C

DATA SUPPLIED IS FOR USE ONLY IN CONNECTION WITH OCCUPATIONAL SAFETY AND HEALTH DATE PREPARED 4/02

The Clorox Company
1221 Broadway
Oakland, CA 94612
Tel. (510) 271-7000

Material Safety Data Sheet

I Product:	CLOROX REGULAR-BLEACH
Description:	CLEAR, LIGHT YELLOW LIQUID WITH A CHARACTERISTIC CHLORINE ODOR

Other Designations	Distributor	Emergency Telephone Nos.
Clorox Bleach EPA Reg. No. 5813-50	Clorox Sales Company 1221 Broadway Oakland, CA 94612	For Medical Emergencies call: (800) 446-1014 For Transportation Emergencies Chemtrec (800) 424-9300

II Health Hazard Data

DANGER: CORROSIVE. May cause severe irritation or damage to eyes and skin. Vapor or mist may irritate. Harmful if swallowed. Keep out of reach of children.

Some clinical reports suggest a low potential for sensitization upon exaggerated exposure to sodium hypochlorite if skin damage (e.g., irritation) occurs during exposure. Under normal consumer use conditions the likelihood of any adverse health effects are low.

Medical conditions that may be aggravated by exposure to high concentrations of vapor or mist: heart conditions or chronic respiratory problems such as asthma, emphysema, chronic bronchitis or obstructive lung disease.

FIRST AID:

Eye Contact: Hold eye open and rinse with water for 15-20 minutes. Remove contact lenses, after first 5 minutes. Continue rinsing eye. Call a physician.

Skin Contact: Wash skin with water for 15-20 minutes. If irritation develops, call a physician.

Ingestion: Do not induce vomiting. Drink a glassful of water. If irritation develops, call a physician. Do not give anything by mouth to an unconscious person.

Inhalation: Remove to fresh air. If breathing is affected, call a physician.

III Hazardous Ingredients

Ingredient	Concentration	Exposure Limit
Sodium hypochlorite CAS# 7681-52-9	6.15%	Not established
Sodium hydroxide CAS# 1310-73-2	<1%	2 mg/m$^{3;1}$ 2 mg/m$^{3;2}$

[1]ACGIH Threshold Limit Value (TLV) - Ceiling

[2]OHSA Permissible Exposure Limit (PEL) – Time Weighted Average (TWA)

None of the ingredients in this product are on the IARC, NTP or OSHA carcinogen lists.

IV Special Protection and Precautions

No special protection or precautions have been identified for using this product under directed consumer use conditions. The following recommendations are given for production facilities and for other conditions and situations where there is increased potential for accidental, large-scale or prolonged exposure.

Hygienic Practices: Avoid contact with eyes, skin and clothing. Wash hands after direct contact. Do not wear product-contaminated clothing for prolonged periods.

Engineering Controls: Use general ventilation to minimize exposure to vapor or mist.

Personal Protective Equipment: Wear safety glasses. Use rubber or nitrile gloves if in contact liquid, especially for prolonged periods.

KEEP OUT OF REACH OF CHILDREN

V Transportation and Regulatory Data

DOT/IMDG/IATA - Not restricted.

EPA - SARA TITLE III/CERCLA: Bottled product is not reportable under Sections 311/312 and contains no chemicals reportable under Section 313. This product does contain chemicals (sodium hydroxide <0.2% and sodium hypochlorite <7.35%) that are regulated under Section 304/CERCLA.

TSCA/DSL STATUS: All components of this product are on the U.S. TSCA Inventory and Canadian DSL.

VI Spill Procedures/Waste Disposal

Spill Procedures: Control spill. Containerize liquid and use absorbents on residual liquid; dispose appropriately. Wash area and let dry. For spills of multiple products, responders should evaluate the MSDS's of the products for incompatibility with sodium hypochlorite. Breathing protection should be worn in enclosed, and/or poorly ventilated areas until hazard assessment is complete.

Waste Disposal: Dispose of in accordance with all applicable federal, state, and local regulations.

VII Reactivity Data

Stable under normal use and storage conditions. Strong oxidizing agent. Reacts with other household chemicals such as toilet bowl cleaners, rust removers, vinegar, acids or ammonia containing products to produce hazardous gases, such as chlorine and other chlorinated species. Prolonged contact with metal may cause pitting or discoloration.

VIII Fire and Explosion Data

Flash Point: None

Special Firefighting Procedures: None

Unusual Fire/Explosion Hazards: None. Not flammable or explosive. Product does not ignite when exposed to open flame.

IX Physical Data

Boiling point.....approx. 212°F/100°C
Specific Gravity (H_20=1) ..... ~ 1.1 at 70°F
Solubility in Water ..... complete
pH .....~11.4

DATA SUPPLIED IS FOR USE ONLY IN CONNECTION WITH OCCUPATIONAL SAFETY AND HEALTH DATE PREPARED 05/05

JohnsonDiversey

MATERIAL SAFETY DATA SHEET

THIS IS NOT A CONTROLLED PRODUCT UNDER WHMIS REGULATION

I - PRODUCT IDENTIFICATION AND USE

MSDS ID: 2979902

PRODUCT NAME: SNUGGLE FABRIC SOFTENER DRYER SHEETS, RAYON

USE: Fabric Softener Dryer Sheets

SUPPLIER:

JohnsonDiversey Canada, Inc.
2401 Bristol Circle
Oakville Ontario, L6H 6P1, Canada

EMERGENCY PHONE:

1-800-668-7171

WHMIS CLASSIFICATION: not applicable
CHEMICAL FAMILY: Surfactant

TRADE NAME / SYNONYMS: not applicable
CHEMICAL NAME: not applicable

II - HAZARDOUS INGREDIENTS

HAZARDOUS INGREDIENT	% w/w	CAS #	LD50 / LC50	Route / Species
No hazardouse ingredients				

III - HANDLING AND DISPOSAL PROCEDURES

PERSONAL PROTECTIVE EQUIPMENT:

Gloves: not required **Eye:** not required **Footwear:** not required

Respiratory: not required **Other:** not required

SPECIAL HANDLING PROCEDURES AND EQUIPMENT: Avoid eye contact.

VENTILATION REQUIREMENTS: general ventilation

INCOMPATIBILITY (Material to Avoid): none

SPILL PROCEDURES: repack sheets into container

WASTE DISPOSAL: Dispose according to municipal, provincial, and federal regulations.

STORAGE / SHIPPING REQUIREMENT: Store in a cool dry area in a closed container.

IV - PHYSICAL PROPERTIES

APPEARANCE / ODOUR: White sheet, perfumed

S.G. / BULK DENSITY(g/cc): not applicable **pH:** not applicable

VAPOUR PRESSURE (mmHg): not applicable **VAPOUR DENSITY (air=1):** not applicable

ODOUR THRESHOLD: not available **BOILING POINT:** not applicable

FREEZING POINT: not applicable **PERCENT VOLATILE:** not available

SOLUBILITY IN WATER: not applicable **EVAPORATION RATE (water=1):** not available

V - TOXICOLOGICAL PROPERTIES

EFFECTS OF ACUTE EXPOSURE TO MATERIAL:

EYES: May cause irritation.

SKIN: Will not cause irritation

INGESTION: May cause irritation

INHALATION: Not a route of entry

LD50 (calculated): not available **LC50 (calculated):** not available

OTHER TOXIC EFFECTS: none known

EFFECTS OF CHRONIC EXPOSURE TO MATERIAL: none known

VI - FIRST AID MEASURES

EYES: Flush eyes with plenty of water for at least 15 minutes. Hold eyelids open while rinsing. Contact a physician immediately.

SKIN: Flush affected area thoroughly with water. If irritation develops, contact a physician.

INGESTION: Drink large volumes of water . Never give anything by mouth to an unconscious patient. Contact a physician immediately.

INHALATION: Remove patient to fresh air.

VII - FIRE AND EXPLOSION DATA

FLAMMABLE: No

FLASH POINT, °C: not applicable

AUTO IGNITION TEMPERATURE,°C: not appl.

EXTINGUISHING MEDIA: Water [x] Dry Chemical [x] Carbon Dioxide [x] Foam [x] Other [ ]

SPECIAL FIRE FIGHTING PROCEDURES: Use extinction media for surrounding fire and acrylic monomer vapours.

HAZARDOUS COMBUSTION PRODUCTS: not applicable.

EXPLOSIVE SENSITIVITY TO: Impact [ ] Static Discharge [ ] Heat [ ] Other [ ]

VIII - REACTIVITY DATA

STABILITY: Stable [x] Unstable [ ]

CONDITIONS TO AVOID: none

INCOMPATIBILITY (Material to Avoid) : none

HAZARDOUS DECOMPOSITION PRODUCTS: none

REACTIVITY: not dangerously reactive

IX - MSDS PREPARATION

SOURCES USED: MSDS date 01/31/95

PREPARATION DATE: November 25, 2002

PREPARED BY: JohnsonDiversey Canada, Inc.
Regulatory Department
Institutional Division
Phone (905) 829-1200

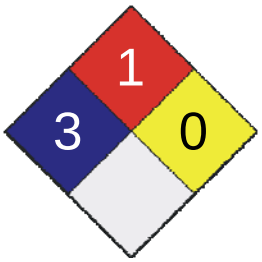
MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Product Name	**EASY-OFF® Oven Cleaner - Heavy Duty**
UPC CODES	Refer to section 16
CAS #	Mixture
Product use	Oven cleaner
Manufacturer	Reckitt Benckiser Morris Corporate Center IV 399 Interpace Parkway P.O. Box 225 Parsippany, NJ 07054-0225 In Case of Emergency: 1-800-228-4722 Transportation Emergencies: 24 Hour Number: North America: CHEMTREC: 1-800-424-9300 Outside North America: 1-703-527-3887

LEGEND HMIS/NFPA	
Severe	4
Serious	3
Moderate	2
Slight	1
Minimal	0

Health	/	3
Flammability		2
Physical Hazard		0
Personal Protection		D



2. Hazards Identification

Emergency overview

DANGER -- CORROSIVE
CONTAINS SODIUM HYDROXIDE (LYE).
CAUSES BURNS TO SKIN AND EYES ON CONTACT.
HARMFUL IF SWALLOWED.
Contents under pressure.
Avoid contact with eyes, skin, mucous membranes and clothing.
DO NOT ingest. Use only with adequate ventilation. Avoid breathing spray mist.
Wear long rubber gloves when using.

KEEP OUT OF REACH OF CHILDREN.

Potential short term health effects

Routes of exposure	Eye, Skin contact, Inhalation, Ingestion.
Eyes	Causes burns.
Skin	Causes burns.
Inhalation	None expected during normal conditions of use. However intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal.
Ingestion	Harmful if swallowed.
Target organs	Eyes. Respiratory system. Skin. Gastrointestinal tract.
Chronic effects	The finished product is not expected to have chronic health effects.
Signs and symptoms	The product causes burns of eyes, skin and mucous membranes.

3. Composition / Information on Ingredients

Ingredient(s)	CAS #	Percent
Ethanol, 2-(2-butoxyethoxy)-	112-34-5	2.5 - 10
Petroleum gases, liquefied, sweetened	68476-86-8	2.5 - 10
Sodium hydroxide	1310-73-2	2.5 - 10
Ethanol, 2-amino-	141-43-5	1 - 2.5

4. First Aid Measures

First aid procedures

Eye contact IMMEDIATELY flush eyes with water. Remove any contact lenses and continue to flush eyes for at least 15 minutes. If irritation persists, seek medical attention immediately.

Skin contact Rinse immediately and remove contaminated clothing. Wash thoroughly with soap and water and continue flushing for at least 10 minutes. If discomfort persists, seek medical attention immediately.

Inhalation Move to fresh air. If symptoms develop or persist, seek medical advice.

Ingestion Do not induce vomiting. Rinse mouth thoroughly and seek medical attention immediately.

Notes to physician Treat patient symptomatically.

General advice Keep away from sources of ignition. No smoking. If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Avoid contact with eyes and skin. Keep out of reach of children.

5. Fire Fighting Measures

Flammable properties Aerosol flame extension less than 18 inches (45 cm).

Extinguishing media

Suitable extinguishing media Dry chemical. Alcohol foam. Water spray.

Unsuitable extinguishing media Not available

Protection of firefighters

Specific hazards arising from the chemical Contents under pressure. Pressurized container may explode when exposed to heat or flame. Cool containers with flooding quantities of water until well after fire is out.

Protective equipment for firefighters Firefighters should wear full protective clothing including self contained breathing apparatus.

Hazardous combustion products May include and are not limited to: Oxides of carbon. Oxides of nitrogen.

Explosion data

Sensitivity to mechanical impact Not available

Sensitivity to static discharge Not available

6. Accidental Release Measures

Personal precautions Keep unnecessary personnel away. Do not touch or walk through spilled material. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Keep people away from and upwind of spill/leak.

Methods for containment Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Stop leak if you can do so without risk. Prevent entry into waterways, sewers, basements or confined areas.

Methods for cleaning up Before attempting clean up, refer to hazard data given above. Remove sources of ignition. Although the chance of a significant spill or leak is unlikely in aerosol containers, in the event of such an occurrence, absorb spilled material with a non-flammable absorbent such as sand or vermiculite.

7. Handling and Storage

Handling

Use good industrial hygiene practices in handling this material. Do not get this material in your eyes, on your skin, or on your clothing. Do not ingest. Do not breathe vapours or spray mist.

Storage

Keep out of reach of children. Do not store at temperatures above 49 °C (120.2°F). Keep away from heat, open flames or other sources of ignition.
Keep from freezing.

NOTE TO PARENTS: Intentional misuse by deliberately concentrating and inhaling aerosol products may be harmful or fatal. Help stop inhalation abuse; for information visit www.inhalant.org.

8. Exposure Controls / Personal Protection

Exposure limits

Ingredient(s)	Exposure Limits
Ethanol, 2-(2-butoxyethoxy)-	**ACGIH-TLV** Not established **OSHA-PEL** Not established
Ethanol, 2-amino-	**ACGIH-TLV** TWA: 3 ppm STEL: 6 ppm **OSHA-PEL** TWA: 3 ppm
Petroleum gases, liquefied, sweetened	**ACGIH-TLV** Not established **OSHA-PEL** Not established
Sodium hydroxide	**ACGIH-TLV** Ceiling: 2 mg/m3 **OSHA-PEL** TWA: 2 mg/m3

Engineering controls Provide adequate ventilation.

Personal protective equipment

Eye / face protection tightly fitting safety goggles

Hand protection Rubber gloves. Confirm with a reputable supplier first.

Skin and body protection As required by employer code. long sleeved clothing
Follow label directions carefully.

Respiratory protection Not normally required under normal use conditions.

General hygiene considerations Handle in accordance with good industrial hygiene and safety practice. When using do not eat or drink. Wash hands before breaks and immediately after handling the product.

9. Physical and Chemical Properties

Appearance Aerosol.

Color White.

Form compressed liquefied gas

Odor Characteristic

Odor threshold Not available

Physical state Gas

pH 13.3

Freezing point Not available

Pour point Not available

Boiling point	Not available
Flash point	> 200 °F (> 93.33 °C) (Liquid)
Evaporation rate	Not available
Flammability limits in air, lower, % by volume	Not available
Flammability limits in air, upper, % by volume	Not available
Vapor pressure	Not available
Vapor density	Not available
Specific gravity	1.052 @ 25°C
Octanol/water coefficient	Not available
Solubility (H2O)	> 95 % @ 70°F
Auto-ignition temperature	Not available
VOC (Weight %)	Not available
Viscosity	Not available

10. Stability and Reactivity

Chemical stability	Stable under recommended storage conditions.
Conditions to avoid	Aerosol containers are unstable at temperatures above 49°C (120.2°F). Do not spray on pilot light, electrical connections, switch, heating elements, or thermostats. Do not spray onto aluminum or painted surfaces as damage to these surfaces may occur. Do not use on grill exterior, interior or components.
Incompatible materials	Acids. Oxidizing agents. Aluminum.
Hazardous decomposition products	May include and are not limited to: Oxides of carbon. Oxides of nitrogen.
Possibility of hazardous reactions	Hazardous polymerization does not occur.

11. Toxicological Information

Component analysis - LC50

Ingredient(s)	LC50
Ethanol, 2-(2-butoxyethoxy)-	Not available
Ethanol, 2-amino-	1210 mg/m3 mouse
Petroleum gases, liquefied, sweetened	Not available
Sodium hydroxide	Not available

Component analysis - Oral LD50

Ingredient(s)	LD50
Ethanol, 2-(2-butoxyethoxy)-	2000 mg/kg guinea pig; 3384 mg/kg rat; 2200 mg/kg rabbit
Ethanol, 2-amino-	1720 mg/kg rat; 700 mg/kg mouse
Petroleum gases, liquefied, sweetened	Not available
Sodium hydroxide	Not available

Effects of acute exposure

Eye	Causes burns.
Skin	Causes burns.
Inhalation	None expected during normal conditions of use. However intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal.
Ingestion	Harmful if swallowed.
Sensitization	The finished product is not expected to have chronic health effects.
Chronic effects	The finished product is not expected to have chronic health effects.
Carcinogenicity	The finished product is not expected to have chronic health effects.
Mutagenicity	The finished product is not expected to have chronic health effects.

Reproductive effects	The finished product is not expected to have chronic health effects.
Teratogenicity	The finished product is not expected to have chronic health effects.
Synergistic Materials	Not available

12. Ecological Information

Ecotoxicity Components of this product have been identified as having potential environmental concerns.

Ecotoxicity - Freshwater Algae Data

Ethanol, 2-(2-butoxyethoxy)-	112-34-5	96 Hr EC50 Desmodesmus subspicatus: >100 mg/L
Ethanol, 2-amino-	141-43-5	72 Hr EC50 Desmodesmus subspicatus: 15 mg/L

Ecotoxicity - Freshwater Fish Species Data

Ethanol, 2-(2-butoxyethoxy)-	112-34-5	96 Hr LC50 Lepomis macrochirus: 1300 mg/L [static]
Ethanol, 2-amino-	141-43-5	96 Hr LC50 Pimephales promelas: 227 mg/L [flow-through]; 96 Hr LC50 Brachydanio rerio: 3684 mg/L [static]; 96 Hr LC50 Lepomis macrochirus: 300-1000 mg/L [static]; 96 Hr LC50 Oncorhynchus mykiss: 114-196 mg/L [static]; 96 Hr LC50 Oncorhynchus mykiss: >200 mg/L [flow-through]
Sodium hydroxide	1310-73-2	96 Hr LC50 Oncorhynchus mykiss: 45.4 mg/L [static]

Ecotoxicity - Microtox Data

Ethanol, 2-amino-	141-43-5	30 Min EC50 Photobacterium phosphoreum: 13.7 mg/L; 17 Hr EC50 Pseudomonas putida: 110 mg/L; 2 Hr EC50 Nitrosomonas: 12200 mg/L

Ecotoxicity - Water Flea Data

Ethanol, 2-(2-butoxyethoxy)-	112-34-5	24 Hr EC50 Daphnia magna: 2850 mg/L; 48 Hr EC50 Daphnia magna: >100 mg/L
Ethanol, 2-amino-	141-43-5	48 Hr EC50 Daphnia magna: 65 mg/L

Environmental effects	Not available
Aquatic toxicity	Not available
Persistence / degradability	Not available
Bioaccumulation / accumulation	Not available
Partition coefficient	Not available
Mobility in environmental media	Not available
Chemical fate information	Not available

13. Disposal Considerations

Waste codes	Not available
Disposal instructions	Dispose in accordance with all applicable regulations.
Waste from residues / unused products	Not available
Contaminated packaging	Not available

14. Transport Information

U.S. Department of Transportation (DOT)

UN1950, Aerosols, Class 2.2 (8), Re-classed as Consumer Commodity ORM-D, FORBIDDEN FROM AIR TRANSPORT

Transportation of Dangerous Goods (TDG - Canada)

UN1950, Aerosols, Class 2.2 (8), Re-classed as Consumer Commodity/ Limited Quantity, FORBIDDEN FROM AIR TRANSPORT

IMDG (Marine Transport)

UN1950, Aerosols, Class 2.2 (8), Limited Quantity

IATA/ICAO (Air)

UN 1950, Aerosols, non-flammable, containing substances in Class 8, Packing Group II, 2.2 (8),
FORBIDDEN FROM AIR TRANSPORT

15. Regulatory Information

US Federal regulations

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

U.S. - CERCLA/SARA - Hazardous Substances and their Reportable Quantities

Ethanol, 2-(2-butoxyethoxy)-	112-34-5	1 Lb statutory RQ (no final RQ is being assigned to the generic or broad class. Includes mono- and di- ethers of ethylene glycol, diethylene glycol and triethylene glycol R-(OCH2CH2)n-OR" where n = 1, 2 or 3, R = alkyl or aryl groups, R" = R h or groups which when removed yield glycol ethers with the structure R-(OCH2CH2)n-OH. Polymers are excluded from glycol category); 0.454 k
Sodium hydroxide	1310-73-2	1000 Lb final RQ; 454 kg final RQ

U.S. - CERCLA/SARA - Section 313 - Emission Reporting

Ethanol, 2-(2-butoxyethoxy)-	112-34-5	1.0 Percent de minimis concentration (applies to R-(OCH2CH2)n-OR' ethers, where n = 1,2, or 3, R=alkyl C7 or less or R = phenyl or alkyl subst. phenyl, R' = H or alkyl C7 or less, or OR' consisting of carboxylic acid ester, sulfate, phosphate, nitrate, or sulfonate, Chemical Category N230)

U.S. - CWA (Clean Water Act) - Hazardous Substances

Sodium hydroxide	1310-73-2	Present

Occupational Safety and Health Administration (OSHA)

29 CFR 1910.1200 hazardous chemical Yes

CERCLA (Superfund) reportable quantity

Sodium hydroxide: 1000.0000

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories Immediate Hazard - Yes
Delayed Hazard - No
Fire Hazard - No
Pressure Hazard - Yes
Reactivity Hazard - No

Section 302 extremely hazardous substance No

Section 311 hazardous chemical Yes

Clean Air Act (CAA) Not available

Clean Water Act (CWA) Not available

State regulations This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

U.S. - California - 8 CCR Section 339 - Director's List of Hazardous Substances

Ethanol, 2-amino-	141-43-5	Present
Sodium hydroxide	1310-73-2	Present

U.S. - Illinois - Toxic Air Contaminants

Ethanol, 2-(2-butoxyethoxy)-	112-34-5	Present
Ethanol, 2-amino-	141-43-5	Present

U.S. - Louisiana - Reportable Quantity List for Pollutants

Ethanol, 2-(2-butoxyethoxy)-	112-34-5	100 Lb RQ
Sodium hydroxide	1310-73-2	1000 Lb final RQ; 454 kg final RQ

U.S. - Massachusetts - Right To Know List

Ethanol, 2-amino-	141-43-5	Present
Sodium hydroxide	1310-73-2	Present

U.S. - Minnesota - Hazardous Substance List

Ethanol, 2-amino-	141-43-5	Present
Sodium hydroxide	1310-73-2	Present

U.S. - New Jersey - Right to Know Hazardous Substance List

Ethanol, 2-(2-butoxyethoxy)-	112-34-5	sn 2265
Ethanol, 2-amino-	141-43-5	sn 0835
Sodium hydroxide	1310-73-2	sn 1706

U.S. - New York - Reporting of Releases Part 597 - List of Hazardous Substances

Sodium hydroxide	1310-73-2	1000 Lb RQ (air); 100 lb RQ (land/water)

U.S. - Pennsylvania - RTK (Right to Know) List

Ethanol, 2-(2-butoxyethoxy)-	112-34-5	environmental hazard
Ethanol, 2-amino-	141-43-5	Present
Sodium hydroxide	1310-73-2	Environmental hazard

U.S. - Rhode Island - Hazardous Substance List

Ethanol, 2-amino-	141-43-5	Toxic; Flammable
Sodium hydroxide	1310-73-2	Toxic; Flammable

Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

16. Other Information

Disclaimer This product should only be used as directed on the label and for the purpose intended. To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Further information	62338-00138 - 16 oz., EASY-OFF® Oven Cleaner - Heavy Duty Regular Scent: 371752 (772-004)
	62338-81397 - 24 oz., EASY-OFF® Heavy Duty Oven Cleaner - Club Pack: 367270
Issue date	07-Jan-2010
Effective date	01-Jan-2010
Prepared by	Reckitt Benckiser Regulatory Department 800-333-3899
Other information	For an updated MSDS, please contact the supplier/manufacturer listed on the first page of the document.

Material Safety Data Sheet

according to ANSI Z400.1- 2004 and 29 CFR 1910.1200

FANTASTIK® ANTIBACTERIAL ALL PURPOSE CLEANER - LEMON POWER™

Version *1*.1

Print Date 06/18/2008

Revision Date 06/09/2008

MSDS Number 350000004768

1. PRODUCT AND COMPANY IDENTIFICATION

Product information

Trade name	:	FANTASTIK® ANTIBACTERIAL ALL PURPOSE CLEANER - LEMON POWER™
Use of the Substance/Preparation	:	Hard Surface Cleaner
Company	:	S.C. Johnson & Son, Inc. 1525 Howe Street Racine WI 53403-2236
Emergency telephone	:	24 Hour Transport & Medical Emergency Phone (866) 231-5406 24 Hour International Emergency Phone (952) 852-4647

2. HAZARDS IDENTIFICATION

Emergency Overview

Appearance / Odor	:	yellow / liquid / pleasant
Immediate Concerns	:	Caution CAUSES EYE IRRITATION. Avoid contact with skin, eyes and clothing.

Potential Health Effects

Routes of exposure	:	Eye, Skin, Inhalation, Ingestion.
Eyes	:	May cause: Moderate eye irritation
Skin	:	May cause skin irritation.
Inhalation	:	None known.
Ingestion	:	May cause irritation to mouth, throat and stomach.
Aggravated Medical Condition	:	Persons with pre-existing skin disorders may be more susceptible to irritating effects.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No.	Weight %
Deionized Water	7732-18-5	90.00 - 100.00
PROPYLENE GLYCOL MONO BUTYL ETHER	5131-66-8	1.00 - 5.00

FANTASTIK® ANTIBACTERIAL ALL PURPOSE CLEANER - LEMON POWER™

Version *1*.1 Print Date 06/18/2008

Revision Date 06/09/2008 MSDS Number 350000004768

ALKYL DIMETHYL BENZYL AMMONIUM CHLORIDE	68391-01-5	0.10 - 1.00
ALKYL DIMETHYL ETHYL BENZYL AMMONIUM CHLORIDE (C12-14)	68956-79-6	0.10 - 1.00

4. FIRST AID MEASURES

Eye contact : Flush immediately with plenty of water for at least 15 to 20 minutes.
Get medical attention if irritation develops and persists.

Skin contact : Flush immediately with plenty of water for at least 15 to 20 minutes.
Get medical attention if irritation develops and persists.

Inhalation : Remove to fresh air.
If breathing is affected, get medical attention.

Ingestion : Do NOT induce vomiting.
Drink 1 or 2 glasses of water.
Never give anything by mouth to an unconscious person.
Get medical attention immediately.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media : Alcohol foam, carbon dioxide, dry chemical, water fog

Specific hazards during fire fighting : Container may melt and leak in heat of fire.

Further information : Wear full protective clothing and positive pressure self-contained breathing apparatus.

Flash point : Note: no data available

Lower explosion limit : Note: no data available

Upper explosion limit : Note: no data available

FANTASTIK® ANTIBACTERIAL ALL PURPOSE CLEANER - LEMON POWER™

Version *1*.1 Print Date 06/18/2008

Revision Date 06/09/2008 MSDS Number 350000004768

6. ACCIDENTAL RELEASE MEASURES

Methods for cleaning up	:	Soak up with inert absorbent material. Dike large spills. Sweep up and shovel into suitable containers for disposal.

7. HANDLING AND STORAGE

Handling

Advice on safe handling	:	Use only as directed. KEEP OUT OF REACH OF CHILDREN AND PETS. Avoid contact with skin, eyes and clothing.

Storage

Requirements for storage areas and containers	:	Keep in a dry, cool and well-ventilated place.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits

ACGIH or OSHA exposure limits have not been established for this product or reportable ingredients unless noted in the table above.

Personal protective equipment

Respiratory protection	:	No personal respiratory protective equipment normally required.
Hand protection	:	not required under normal use For prolonged or repeated contact use protective gloves.
Eye protection	:	No special requirements. If prolonged or repeated contact is possible: Wear splash-resistant Chemical goggles.
Hygiene measures	:	Use only with adequate ventilation. Wash thoroughly after handling.

9. PHYSICAL AND CHEMICAL PROPERTIES

FANTASTIK® ANTIBACTERIAL ALL PURPOSE CLEANER - LEMON POWER™

Version *1*.1 Print Date 06/18/2008

Revision Date 06/09/2008 MSDS Number 350000004768

Form	:	liquid
Color	:	yellow
Odor	:	pleasant
pH	:	11.8 - 12.4
Boiling point	:	no data available
Flash point	:	no data available
Lower explosion limit	:	no data available
Upper explosion limit	:	no data available
Vapour pressure	:	not determined
Density	:	similar to water
Water solubility	:	soluble

10. STABILITY AND REACTIVITY

Conditions to avoid	:	None known.
Materials to avoid	:	Strong acids
Hazardous decomposition products	:	When exposed to fire, produces normal products of combustion.
Hazardous reactions	:	Stable

11. TOXICOLOGICAL INFORMATION

Acute oral toxicity	:	no data available
Acute inhalation toxicity	:	no data available
Acute dermal toxicity	:	no data available

Chronic effects

Carcinogenicity	:	no data available
Mutagenicity	:	no data available

FANTASTIK® ANTIBACTERIAL ALL PURPOSE CLEANER - LEMON POWER™

Version *1*.1 Print Date 06/18/2008

Revision Date 06/09/2008 MSDS Number 350000004768

Reproductive effects	:	no data available
Teratogenicity	:	no data available
Sensitisation	:	Not known to be a sensitizer.

12. ECOLOGICAL INFORMATION

Ecotoxicity effects

Not Available

13. DISPOSAL CONSIDERATIONS

Product	:	Observe all applicable Federal, Provincial and State regulations and Local/Municipal ordinances regarding disposal.

14. TRANSPORT INFORMATION

Land transport

- **U.S. DOT and Canadian TDG Surface Transportation**

UN-Number:	None.
Proper shipping name	not regulated
Class:	None.
Packaging group	None.

Sea transport

- *IMDG:*

UN-Number:	None.
Packaging group:	None.
Proper shipping name	not regulated
Class:	None.

Air transport

- *ICAO/IATA:*

Class:	None.
Packaging group:	None.
Proper shipping name	not regulated
UN/ID No.:	None.

FANTASTIK® ANTIBACTERIAL ALL PURPOSE CLEANER - LEMON POWER™

Version *1*.1 Print Date 06/18/2008

Revision Date 06/09/2008 MSDS Number 350000004768

15. REGULATORY INFORMATION

Global Chemical Inventories

Notification status	:	All ingredients of this product are listed or are excluded from listing on the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.
	:	All ingredients of this product comply with the New Substances Notification requirements under the Canadian Environmental Protection Act (CEPA).
California Prop. 65	:	This product is not subject to the reporting requirements under California's Proposition 65.
	:	This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.
EPA Registration Number	:	4822-530

16. OTHER INFORMATION

HMIS Ratings

Health	2
Flammability	0
Reactivity	0

NFPA Ratings

Health	2
Fire	0
Reactivity	0

FANTASTIK® ANTIBACTERIAL ALL PURPOSE CLEANER - LEMON POWER™

Version *1*.1
Print Date 06/18/2008
Revision Date 06/09/2008
MSDS Number 350000004768

Special

Further information

This document has been prepared using data from sources considered to be technically reliable. It does not constitute a warranty, expressed or implied, as to the accuracy of the information contained herein. Actual conditions of use are beyond the seller's control. User is responsible to evaluate all available information when using product for any particular use and to comply with all Federal, State, Provincial and Local laws and regulations.

Prepared by:	SC Johnson Global Safety Assessment & Regulatory Affairs (GSARA)

Procter & Gamble
Fabric and Home Care Division
Ivorydale Technical Center
5299 Spring Grove Avenue
Cincinnati, OH 45217-1087

MATERIAL SAFETY DATA SHEET

MSDS #: FH/F/2004/VBVV-63YQ5Y Issue Date: 8/30/04
Supersedes: FH/F/2004/MBMS-5ZCGW9 Issue Date: 6/22/04

SECTION I - CHEMICAL PRODUCT

Identity: **Fabric Refresher**

Brands: **FEBREZE (All variations)**

Hazard Rating:	Health:	1	4=EXTREME
	Flammability:	2	3=HIGH
	Reactivity:	0	2= MODERATE
			1=SLIGHT

Emergency Telephone Number: P&G Operator: 1-800-308-EASY (1-800-308-3279) or call Local Poison Control Center

SECTION II - COMPOSITION AND INGREDIENTS

Ingredients include: Contains water, alcohol, odor eliminator derived from corn, fragrance

Hazardous Ingredients as defined by OSHA, 29 CFR 1910.1200.

Chemical Name	Common Name	CAS No.	Recommended Limits	Concentration	LC50/LD50
Ethyl alcohol	Ethanol	64-17-5	OSHA Z-1 PEL: 1000 ppm (1900mg/m3) ACGIH TWA: 1000 ppm (1880 mg/m3) NIOSH REL: 1000 ppm (1900 mg/m3)	1-5%	LD50=13 mL/kg (oral, rats) LC50=N/A

SECTION III - HAZARDS IDENTIFICATION

Health Hazards (Acute and Chronic):

Ingestion: None
Eye Contact: Mild eye irritant.
Inhalation: None

Signs and Symptoms of Exposure:

Ingestion: Possible mild gastrointestinal irritation with nausea, vomiting, and/or diarrhea.
Eye Contact: Do not spray directly toward face. If eye contact occurs, rinse well with water.
Skin: Prolonged skin contact or instillation into the eye may result in transient, superficial effects similar to those produced by mild toilet soap.
Inhalation: Inhalation of high concentrations of ethanol vapor may cause irritation of the eyes and respiratory tract, drowsiness, and fatigue.

SECTION IV - FIRST AID INFORMATION

Emergency and First Aid Procedures:

Inhalation: Remove to fresh air.

Ingestion: Dilute with fluids and treat symptomatically.

Eye Contact: Rinse well with water for at least 15 minutes.

Skin: Rinse with water.

Other: Consumer product packages have a caution statement: USE ONLY AS INTENDED. **KEEP OUT OF THE REACH OF CHILDREN**. Do not spray directly toward face. If eye contact occurs, rinse well with water.

SECTION V - FIRE FIGHTING INFORMATION

Flash Point (Method Used): >> 141° F (cc) **Explosive Limits**: *LEL:* N/A *UEL*: N/A

Extinguishing Media: Use CO_2, water, or dry chemical.

Special Fire Fighting Procedures:. N/A

Unusual Fire Hazards: N/A

Stability *Unstable*: *Conditions to Avoid*: None

Stable: X

Incompatibility (Materials to Avoid): None known

Hazardous Decomposition/By Products: None known

Hazardous Polymerization: *May Occur*: *Conditions to Avoid*: None

Will Not Occur: X

SECTION VI - ACCIDENTAL RELEASE MEASURES

Personal Precautions: Use chemical goggles and protective gloves (rubber, neoprene) during spill clean-up.

Environmental Precautions: DISPOSAL IS TO BE PERFORMED IN COMPLIANCE WITH ALL FEDERAL, STATE OR PROVINCIAL AND LOCAL REGULATIONS. Slowly flush down sewer with excess water or dispose as liquid scrap. Discard empty container in trash. Do not landfill liquids.

Steps To Be Taken in Case Material is Released or Spilled: Use water spray to dilute and/or wash away spills to avoid exposure and to protect persons working to stop/repair leak. Any spills are to be prevented from entering waterways. Sorbents may be used.

SECTION VII - HANDLING AND STORAGE

Precautions To Be Taken in Handling and Storing: Store at room temperature.

Other Precautions: None

SECTION VIII - EXPOSURE CONTROLS, PERSONAL PROTECTION

Respiratory Protection (Specify Type): No special requirements with casual exposure.

Ventilation *Local Exhaust*: Not necessary. *Special*: None

.

Mechanical (General): Acceptable *Other*: None

Eye Protection: None required with normal consumer use.

Industrial Setting: If a splash of solution is likely, chemical goggles may be needed.

Protective Gloves: None required with normal consumer use.

Industrial Setting: Minimize skin contact with protective gloves (rubber, neoprene).

Other Protective Equipment: None required with normal consumer use.

Industrial Setting: Use ventilation to minimize exposure to vapor or mist (ethanol).

SECTION IX - PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point °F: ~212ºF

Vapor Pressure (mm Hg): N/A

Vapor Density (Air=1): N/A

Odor Threshold: N/A

Coefficient of Water/Oil Distribution: N/A

Density: ca 0.1 g/mL

Appearance and Odor: Clear liquid. Product is perfumed.

Specific Gravity (H_2O=1): ca. 1

Percent Volatile by Volume (%): ca. 95

Evaporation Rate (nBuOAc=1): N/K

Freezing Point: N/A

pH (1% solution): 2.5-7.5

Solubility in Water: Soluble

Reserve Alkalinity: N/A

SECTION X - STABILITY AND REACTIVITY

Possible Hazardous Reactions/Conditions: None known

Conditions to Avoid: None known

Materials to Avoid: None

Hazardous Decomposition Products: None known

Other Recommendations: None

SECTION XI - TOXICOLOGICAL INFORMATION

LD50 (rats oral): >5000 mg/kg

SECTION XII - ECOLOGICAL INFORMATION

No concerns at relevant environmental concentrations.

SECTION XIII - DISPOSAL CONSIDERATIONS

Waste Disposal Method: Slowly flush down sewer with excess water or dispose as liquid scrap. Disposal is to be performed in compliance with all Federal, State or Provinical and local regulations. Discard empty container in trash. Do not landfill liquids.

SECTION XIV - TRANSPORT INFORMATION

The finished, packaged product is non-hazardous under DOT.

SECTION XV - ADDITIONAL REGULATORY INFORMATION

All components are listed on the US TSCA Inventory. No components are affected by Significant New Use Rules (SNURs) under TSCA §5.

No components of Febreze are subject to California Proposition 65.

Chemical Name	CERCLA RQ
Ethanol	100 lbs
Hydrochloric Acid	5000 lbs

EPCRA (SARA Title III) Section 313 Toxic Chemical: Hydrochloric Acid 1.0% De Minimis Concentration

All ingredients are CEPA approved for import to Canada by Procter & Gamble. This product has been classified with Hazard Criteria of the Canadian Controlled Products Regulation (CPR) and this MSDS contains all required information.

SECTION XVI - OTHER INFORMATION

*N/A. - Not Applicable *N/K. - Not Known

The submission of this MSDS may be required by law, but this is not an assertion that the substance is hazardous when used in accordance with proper safety practices and normal handling procedures. Data supplied is for use only in connection with occupational safety and health.

The information contained herein has been compiled from sources considered by Procter & Gamble to be dependable and is accurate to the best of the Company's knowledge. The information relates to the specific material designated herein, and does not relate to the use in combination with any other material or any other process. Procter & Gamble assumed no responsibility for injury to the recipient or third persons, for any damage to any property resulting from misuse of the controlled product.

GLADE® CARPET & ROOM DEODORIZER - VANILLA BREEZES*

Date Issued: 03Mar2003 **Supersedes: 06Jul1998**

US MANUFACTURER:
S.C. Johnson & Son, Inc.
Phone: (800) 725-6737
Racine, Wisconsin 53403-2236
Emergency Phone: (888) 779-7920
International Emergency Phone:
(262) 886-1480

CANADIAN MANUFACTURER:
S.C. Johnson and Son, Limited
Phone: (800) 725-6737
1 Webster Street
Brantford, Ontario N3T 5R1
Transportation Emergency:
CANUTEC (collect) (613) 996-6666
Poison Control: (888) 779-7920

HAZARD RATING	HMIS	HAZARD	NFPA
4-Very High	1	Health	1
3-High	0	Flammability	0
2-Moderate	0	Reactivity	0
1-Slight		Special	
0-Insignificant			

DISTRIBUTED IN CANADA BY:
S.C. Johnson and Son, Limited
Phone: (800) 725-6737
1 Webster Street
Brantford, Ontario N3T 5R1

SECTION 1 - PRODUCT IDENTIFICATION

PRODUCT NAME..... GLADE® CARPET & ROOM DEODORIZER - VANILLA BREEZES*
PRODUCT USE..... Air care

UPC	SCJ CODE	QUANTITY	US SIZE	CANADIAN SIZE
46500 00864	864	12	32 OZ.	
46500 00920	70920	12	16 OZ.	
46500 10920	80920	12	20 OZ.	

SECTION 2 - INGREDIENT INFORMATION

INGREDIENT	WEIGHT%	EXPOSURE LIMIT/TOXICITY
Sodium Silico Aluminate (CAS# 1344-00-9).....	1-5	10 mg/m³ TWA (NUISANCE DUST)
Sodium Sulfate (CAS# 7757-82-6).....	90-98	10 mg/m³ (SUPPLIER RECOMMENDED)

SECTION 3 - HEALTH HAZARDS IDENTIFICATION (Also See Section 11)

ROUTE(S) OF ENTRY..... Eye contact.
EFFECTS OF ACUTE EXPOSURE:
EYE..... May cause: Mild eye irritation.
SKIN..... None known.
INHALATION..... None known.
INGESTION..... May cause: Abdominal discomfort.
MEDICAL CONDITIONS..... None known.
GENERALLY RECOGNIZED
AS BEING AGGRAVATED
BY EXPOSURE

SECTION 4 - FIRST AID MEASURES

EYE CONTACT..... Flush immediately with plenty of water for at least 15 to 20 minutes. If irritation persists, get medical attention.
SKIN CONTACT..... Wash contaminated area with water and soap.
INHALATION..... No special requirements.
INGESTION..... No special requirements.

GLADE® CARPET & ROOM DEODORIZER - VANILLA BREEZES*

Date Issued: 03Mar2003 **Supersedes: 06Jul1998**

SECTION 5 - FIRE AND EXPLOSION INFORMATION

FLASH POINT	Not applicable.
FLAMMABLE LIMITS	Not applicable.
AUTOIGNITION TEMPERATURE	Not available.
EXTINGUISHING MEDIA	Foam. CO2. Dry chemical. Water fog.
SPECIAL FIREFIGHTING PROCEDURES	Normal fire fighting procedure may be used.
UNUSUAL FIRE AND EXPLOSION HAZARDS	No special hazards known.

SECTION 6 - PREVENTIVE RELEASE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	Sweep or scrape up and containerize.

SECTION 7 - HANDLING AND STORAGE

PRECAUTIONARY INFORMATION	Keep out of reach of children.
OTHER HANDLING AND STORAGE CONDITIONS	Keep container well closed when not in use.

SECTION 8 - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION	No special requirements under normal use conditions.
VENTILATION	General room ventilation adequate.
PROTECTIVE GLOVES	No special requirements under normal use conditions.
EYE PROTECTION	No special requirements under normal use conditions.
OTHER PROTECTIVE MEASURES	No special requirements.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

COLOR	White
PRODUCT STATE	Powder
ODOR	Fragrant
pH	Not applicable.
ODOR THRESHOLD	Not available.
SOLUBILITY IN WATER	Appreciable
SPECIFIC GRAVITY (H2O=1)	Not applicable.
VAPOR DENSITY (AIR=1)	Not available.
EVAPORATION RATE (BUTYL ACETATE=1)	Not applicable.
VAPOR PRESSURE (mm HG)	Not applicable.
BOILING POINT	Not applicable.
FREEZING POINT	Not applicable.
COEFFICIENT OF WATER/OIL	Not applicable.
PERCENT VOLATILE BY VOLUME (%)	Not available.
VOLATILE ORGANIC COMPOUND (VOC)	Not available.

GLADE® CARPET & ROOM DEODORIZER - VANILLA BREEZES*

Date Issued: 03Mar2003 **Supersedes: 06Jul1998**

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES (continued)

THEORETICAL VOC (LB/GAL)	Not available.

SECTION 10 - STABILITY AND REACTIVITY

STABILITY	Stable
STABILITY - CONDITIONS TO AVOID	No special requirements.
INCOMPATIBILITY	None known.
HAZARDOUS DECOMPOSITION PRODUCTS	When exposed to fire: Produces normal products of combustion.
HAZARDOUS POLYMERIZATION	Will not occur.
HAZARDOUS POLYMERIZATION - CONDITIONS TO AVOID	Not applicable.

SECTION 11 - TOXICOLOGY INFORMATION (Also See Section 3)

LD50 (ACUTE ORAL TOX)	Estimated to be greater than 5000 mg/kg (rats).
LD50 (ACUTE DERMAL TOX)	Not available.
LC50 (ACUTE INHALATION TOX)	Not available.
EFFECTS OF CHRONIC EXPOSURE	None known.
SENSITIZATION	None known.
CARCINOGENICITY	None known.
REPRODUCTIVE TOXICITY	None known.
TERATOGENICITY	None known.
MUTAGENICITY	None known.

SECTION 12 - ECOLOGICAL INFORMATION

ENVIRONMENTAL DATA	Not available.

SECTION 13 - DISPOSAL CONSIDERATIONS

WASTE DISPOSAL INFORMATION	No special method. Observe all applicable Federal/ Provincial/ State regulations and Local/ Municipal ordinances regarding disposal of non-hazardous materials.

SECTION 14 - TRANSPORTATION INFORMATION

US DOT INFORMATION	Deodorants, carpet or rug, powdered.
CANADIAN SHIPPING NAME	GLADE® CARPET & ROOM DEODORIZER - VANILLA BREEZES*
TDG CLASSIFICATION	Non-regulated.
PIN/NIP	Not applicable.
PACKING GROUP	Not applicable.
EXEMPTION NAME	Not applicable.

SECTION 15 - REGULATORY INFORMATION

WHMIS CLASSIFICATION	Non-regulated.

GLADE® CARPET & ROOM DEODORIZER - VANILLA BREEZES*

Date Issued: 03Mar2003 **Supersedes: 06Jul1998**

SECTION 15 - REGULATORY INFORMATION (continued)

All ingredients of this product are listed or are excluded from listing on the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.

All ingredients in this product comply with the New Substances Notification requirements under the Canadian Environmental Protection Act (CEPA).

This product is not subject to the reporting requirements under California's Proposition 65.

SECTION 16 - OTHER INFORMATION

ADDITIONAL INFORMATION. Use as directed.
EPA REGISTRATION #..... Not applicable.

PREPARATION INFORMATION

PREPARED BY..... Manufacturer's Technical Support Department. Refer to page 1 (Manufacturer) for contact information.

PRINT DATE: 03Mar2003

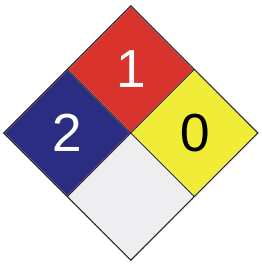
MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Product Name	**Lysol Brand II (Kills 99.9% of Viruses & Bacteria) Bathroom Cleaner Complete Clean (Aerosol), All Scents**
UPC CODES	Refer to section 16
CAS #	Mixture
Product Use	Bathroom cleaner
Distributed by	Reckitt Benckiser (Canada) Inc. 1680 Tech Avenue Unit #2 Mississauga, ON L4W 5S9 In Case of Emergency: 1-800-888-0192 Transportation Emergencies: 24 Hour Number: North America: CHEMTREC: 1-800-424-9300 Outside North America: 1-703-527-3887

LEGEND HMIS/NFPA	
Severe	4
Serious	3
Moderate	2
Slight	1
Minimal	0

Health	/ 2
Flammability	1
Physical Hazard	0
Personal Protection	B



2. Hazards Identification

Emergency Overview

This product is regulated by Health Canada as a disinfectant. Extensive testing has been completed to show that it is safe and effective when used as directed.

CAUTION
EXPLOSIVE.
EYE IRRITANT.
Avoid contact with eyes, skin and food.
DO NOT mix with other chemicals.
Contents under pressure.
DO NOT place in hot water or near radiators, stoves or other sources of heat.
DO NOT puncture or incinerate container, even when empty, or store at temperatures over 50°C.

Keep out of reach of children.

Potential short term health effects

Routes of exposure	Eye, Skin contact, Inhalation, Ingestion.
Eyes	Eye irritant.
Skin	Avoid skin contact. Not expected to be a skin sensitizer.
Inhalation	None expected during normal conditions of use.
Ingestion	Health injuries are not known or expected under normal use.
Target organs	Skin. Eyes. Respiratory system.
Chronic effects	The finished product is not expected to have chronic health effects.
Signs and symptoms	Symptoms may include redness, oedema, drying, defatting and cracking of the skin. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.

3. Composition/Information on Ingredients

Ingredient(s)	CAS #	Percent
Octyl Decyl Dimethyl Ammonium Chloride	Not Available	0 - 0.1
Dioctyl Dimethyl Ammonium Chloride	Not Available	0 - 0.1
Didecyl Dimethyl Ammonium Chloride	Not Available	0 - 0.1
Tetrasodium ethylenediamine tetraacetate	64-02-8	3 - 7
Diethylene glycol monobutyl ether	112-34-5	3 - 7
Isobutane	75-28-5	5 - 10

4. First Aid Measures

First aid procedures

Eye contact If in eyes, immediately flush eyes with water. Remove any contact lenses and continue flushing for at least 15 minutes. Call physician if irritation persists.

Skin contact If on skin, wash thoroughly with soap and water.

Inhalation Move to fresh air.

Ingestion If swallowed, drink large quantities of milk or water. Call a physician or a Poison Control Centre immediately.

Notes to physician Symptoms may be delayed. Treat patient symptomatically.

General advice Do not puncture or incinerate container. If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Avoid contact with eyes and skin. Keep out of reach of children.

5. Fire-fighting Measures

Flammable properties Aerosol flame extension less than 18 inches (45 cm).

Extinguishing media

Suitable extinguishing media Water spray. Foam. Dry chemical. Carbon dioxide.

Unsuitable extinguishing media Not available

Protection of firefighters

Specific hazards arising from the chemical Contents under pressure. Pressurized container may explode when exposed to heat or flame. Cool containers with flooding quantities of water until well after fire is out.

Protective equipment for firefighers Firefighters should wear full protective clothing including self contained breathing apparatus.

Hazardous combustion products May include and are not limited to: Oxides of carbon. Oxides of nitrogen.

Explosion data

Sensitivity to mechanical impact Not available

Sensitivity to static discharge Not available

6. Accidental Release Measures

Personal precautions Keep unnecessary personnel away. Do not touch or walk through spilled material. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Keep people away from and upwind of spill/leak.

Methods for containment Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Stop leak if you can do so without risk. Prevent entry into waterways, sewers, basements or confined areas.

Methods for cleaning up Before attempting clean up, refer to hazard data given above. Remove sources of ignition. Although the chance of a significant spill or leak is unlikely in aerosol containers, in the event of such an occurrence, absorb spilled material with a non-flammable absorbent such as sand or vermiculite.
Wipe up with absorbent material (e.g. cloth, fleece).

7. Handling and Storage

Handling

Use good industrial hygiene practices in handling this material.
When using do not eat or drink.

Always replace cap after use.

Storage

Do not contaminate water, food or feed by use or storage.
Store in original container in areas inaccessible to small children.
Do not use or store near heat or open flame.
Do not reuse container.
Exposure to temperatures above 120°F or in sun or discarding can in fire or incinerator may cause bursting.

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

8. Exposure Controls / Personal Protection

Exposure limit values

Ingredient(s)	Exposure limit values
Didecyl Dimethyl Ammonium Chloride	**ACGIH-TLV** Not established
Diethylene glycol monobutyl ether	**ACGIH-TLV** Not established
Dioctyl Dimethyl Ammonium Chloride	**ACGIH-TLV** Not established
Isobutane	**ACGIH-TLV** TWA: 1000 ppm
Octyl Decyl Dimethyl Ammonium Chloride	**ACGIH-TLV** Not established
Tetrasodium ethylenediamine tetraacetate	**ACGIH-TLV** Not established

Engineering controls

General ventilation normally adequate.

Personal protective equipment

Eye/Face protection

Safety goggles or glasses.
Emergency responders should wear full eye and face protection.

Hand protection

Wear impervious gloves where the potential for contact with the liquid is possible.
Emergency responders should wear impermeable gloves.

Skin and body protection

As required by employer code.

Respiratory protection

Where exposure guideline levels may be exceeded, use an approved NIOSH respirator.
Emergency responders should wear self-contained breathing apparatus (SCBA) to avoid inhalation of vapours generated by this product during a spill or other clean-up operations.

General hygiene considerations

Handle in accordance with good industrial hygiene and safety practice.
When using do not eat or drink.
Washing with soap and water after use is recommended as good hygienic practice to prevent possible eye irritation from hand contact.

9. Physical and Chemical Properties

Appearance Foamy Spray
Colour White.
Form Spray
Odour Various
Odour threshold Not available
Physical state Liquid
pH 12.5 - 13.5

Freezing point	Not available
Boiling point	Not available
Pour point	Not available
Flash point	> 93.33 °C (> 200 °F) TCC
Evaporation Rate	Not available
Flammability limits in air, lower, % by volume	Not available
Flammability Limits in Air, Upper, % by Volume	Not available
Vapour pressure	Not available
Vapour density	Not available
Specific gravity	1.025 - 1.035 @ 25°C
Octanol/water coefficient	Not available
Solubility (H2O)	Complete
Auto-ignition temperature	Not available
VOC (Weight %)	Not available
Viscosity	Not available
Percent volatile	Not available

10. Stability and Reactivity

Chemical stability	Stable under recommended storage conditions.
Conditions to avoid	Aerosol containers are unstable at temperatures above 49°C (120.2°F). DO NOT MIX WITH BLEACH or use in conjunction with other household products. Excessive heat.
Incompatible materials	Oxidizers. Acids.
Hazardous decomposition products	May include and are not limited to: Oxides of carbon. Oxides of nitrogen.
Possibility of hazardous reactions	Hazardous polymerisation does not occur.

11. Toxicological Information

Component analysis - LC50

Ingredient(s)	LC50
Didecyl Dimethyl Ammonium Chloride	Not available
Diethylene glycol monobutyl ether	Not available
Dioctyl Dimethyl Ammonium Chloride	Not available
Isobutane	658 mg/l/4h rat
Octyl Decyl Dimethyl Ammonium Chloride	Not available
Tetrasodium ethylenediamine tetraacetate	Not available

Component analysis - Oral LD50

Ingredient(s)	LD50
Didecyl Dimethyl Ammonium Chloride	Not available
Diethylene glycol monobutyl ether	2000 mg/kg guinea pig; 3384 mg/kg rat; 2200 mg/kg rabbit
Dioctyl Dimethyl Ammonium Chloride	Not available
Isobutane	Not available
Octyl Decyl Dimethyl Ammonium Chloride	Not available
Tetrasodium ethylenediamine tetraacetate	2000 mg/kg rat

Effects of acute exposure

Eye	Eye irritant.
Skin	Avoid skin contact. Not expected to be a skin sensitizer.
Inhalation	None expected during normal conditions of use.
Ingestion	Health injuries are not known or expected under normal use.

Sensitisation	The finished product is not expected to have chronic health effects.
Chronic effects	The finished product is not expected to have chronic health effects.
Carcinogenicity	The finished product is not expected to have chronic health effects.
Mutagenicity	The finished product is not expected to have chronic health effects.
Reproductive effects	The finished product is not expected to have chronic health effects.
Teratogenicity	The finished product is not expected to have chronic health effects.
Synergistic Materials	Not available

12. Ecological Information

Ecotoxicity

Bulk quantities, if spilled, may be toxic to aquatic organisms, fish, birds and mammals. Control and clean up all exterior spills and prevent liquid from entering any streams, rivers, lakes and all other bodies of water.

Ecotoxicity - Freshwater Algae Data

Diethylene glycol monobutyl ether	112-34-5	96 Hr EC50 Desmodesmus subspicatus: >100 mg/L
Tetrasodium ethylenediamine tetraacetate	64-02-8	72 Hr EC50 Desmodesmus subspicatus: 1.01 mg/L

Ecotoxicity - Freshwater Fish Species Data

Diethylene glycol monobutyl ether	112-34-5	96 Hr LC50 Lepomis macrochirus: 1300 mg/L [static]
Tetrasodium ethylenediamine tetraacetate	64-02-8	96 Hr LC50 Lepomis macrochirus: 41 mg/L [static]; 96 Hr LC50 Pimephales promelas: 59.8 mg/L [static]

Ecotoxicity - Water Flea Data

Diethylene glycol monobutyl ether	112-34-5	24 Hr EC50 Daphnia magna: 2850 mg/L; 48 Hr EC50 Daphnia magna: >100 mg/L
Tetrasodium ethylenediamine tetraacetate	64-02-8	24 Hr EC50 Daphnia magna: 610 mg/L

Environmental effects	Not available
Aquatic toxicity	Not available
Persistence and degradability	Not available
Bioaccumulation/accumulation	Not available
Partition coefficient	Not available
Mobility in environmental media	Not available
Chemical fate information	Not available
Other adverse effects	Not available

13. Disposal Considerations

Waste codes	Not available
Disposal instructions	Review federal, state/provincial, and local government requirements prior to disposal. Discard with solid waste. Do not reuse empty container. Replace cap and discard in trash. Do not incinerate or puncture.
Waste from residues / unused products	Not available
Contaminated packaging	Not available

14. Transport Information

U.S. Department of Transportation (DOT)

UN 1950, Aerosols, Class 2.1, Re-classed as
Consumer Commodity ORM-D

Transportation of Dangerous Goods (TDG - Canada)

UN 1950, Aerosols, Class 2.1, Re-classed as
Consumer Commodity/ LTD. QTY.

IMDG (Marine Transport)

UN 1950, Aerosols, Class 2.1, Limited Quantity

IATA/ICAO (Air)

UN1950, Aerosols, Flammable, Limited Quantity

15. Regulatory Information

Canadian federal regulations

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

Product Registration: Registered with TPD, DIN 02270498

Canada - CEPA - High Priority Chemicals as Identified by DSL Categorization

Isobutane	75-28-5	Batch 4, published November 17, 2007

Canada - WHMIS - Ingredient Disclosure List

Diethylene glycol monobutyl ether	112-34-5	1 %

WHMIS classification

Exempt - Registered product - (DIN 02270498)

Inventory Status

Country(s) or region	Inventory Name	On Inventory (Yes/No)*
Canada	Domestic Substances List (DSL)	No
Canada	Non-Domestic Substances List (NDSL)	Yes

A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

16. Other Information

Disclaimer

This product should only be used as directed on the label and for the purpose intended. To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Further information

59631-76342-6 - LYSOL® Brand (Kills 99.9% of Viruses & Bacteria) Bathroom Cleaner Complete Clean (Aerosol), All Scents - 680g - Regular Scent Aerosol - 0074422

59631-76343-3 - LYSOL® Brand (Kills 99.9% of Viruses & Bacteria) Bathroom Cleaner Complete Clean (Aerosol), All Scents - 680g - Summer Fresh Aerosol - 0074419

Issue date 04-Jun-2010

Effective Date 01-Jun-2010

Expiry Date 01-Jun-2013

Prepared by Reckitt Benckiser Regulatory Department 800-333-3899

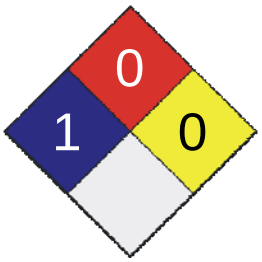
MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Product Name	**Lysol Brand® (Kills 99.9% of Viruses & Bacteria) Disinfecting Wipes, All Scents**
UPC CODES	Refer to Section 16
CAS #	Mixture
Product use	Disinfectant
Distributed by	Reckitt Benckiser Morris Corporate Center IV 399 Interpace Parkway P.O. Box 225 Parsippany, NJ 07054-0225 In Case of Emergency: 1-800-228-4722 Transportation Emergencies: 24 Hour Number: North America: CHEMTREC: 1-800-424-9300 Outside North America: 1-703-527-3887

LEGEND HMIS/NFPA	
Severe	4
Serious	3
Moderate	2
Slight	1
Minimal	0

Health	/	1
Flammability		0
Physical Hazard		0
Personal Protection		B



2. Hazards Identification

Emergency overview

This product is regulated by the US EPA as a disinfectant.

PRECAUTIONARY STATEMENTS: Hazards to humans and domestic animals.

CAUTION
Causes moderate eye irritation. Avoid contact with eyes or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum or using tobacco.

KEEP OUT OF REACH OF CHILDREN.

Potential short term health effects

Routes of exposure	Eye, Skin contact, Inhalation, Ingestion.
Eyes	May irritate eye.
Skin	Non-irritating to the skin.
Inhalation	None expected.
Ingestion	Not orally toxic.
Target organs	Blood. Eyes. Liver. Respiratory system. Skin.
Chronic effects	The finished product is not expected to have chronic health effects.
Signs and symptoms	Symptoms may include redness, edema, drying, defatting and cracking of the skin.

3. Composition / Information on Ingredients

Ingredient(s)	CAS #	Percent
Ethanol	64-17-5	2.5 - 10
Alkyl (50%C14, 40%C12, 10%C16) dimethyl benzyl ammonium chlorides	Not Applicable	0.1 - 1

4. First Aid Measures

First aid procedures

Eye contact	Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.
Skin contact	In keeping with good hygienic practices, wash exposed areas thoroughly with soap and water.
Inhalation	None required under recommended use conditions. Remove to fresh air.
Ingestion	Rinse mouth with water. Contact a physician or poison control center if symptoms develop. NEVER give an unconscious person anything to ingest.
Notes to physician	Symptoms may be delayed.
General advice	Keep away from sources of ignition. No smoking. If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Avoid contact with eyes and skin. Keep out of reach of children.

5. Fire Fighting Measures

Flammable properties	Not flammable by OSHA criteria.
Extinguishing media	
Suitable extinguishing media	Water spray. Foam. Dry chemical.
Unsuitable extinguishing media	Not available
Protection of firefighters	
Specific hazards arising from the chemical	Not available
Protective equipment for firefighters	Firefighters should wear full protective clothing including self contained breathing apparatus.
Hazardous combustion products	May include and are not limited to: Oxides of carbon. Oxides of nitrogen.
Explosion data	
Sensitivity to mechanical impact	Not available
Sensitivity to static discharge	Not available

6. Accidental Release Measures

Personal precautions	Keep unnecessary personnel away. Do not touch or walk through spilled material. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Keep people away from and upwind of spill/leak.
Methods for containment	Do not allow product to enter sewer or waterways.
Methods for cleaning up	Remove sources of ignition. Never return spills in original containers for re-use.
Other information	Pick up and discard towel.

7. Handling and Storage

Handling	CAUTION May cause eye irritation. Avoid contact with eyes. Wash hands after handling and before eating. Use good industrial hygiene practices in handling this material. DO NOT PUSH FINGER THROUGH OPENING. Use according to package label instructions.
Storage	Store in original container in a cool, secure area inaccessible to children and pets. Do not store at temperatures above 120°F (49°C). Store in a closed container away from incompatible materials. Food contact surfaces must be rinsed with potable water. Unplug small appliances before cleaning. Not recommended for polished or bare wood floors. Not intended for personal hygiene. It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

8. Exposure Controls / Personal Protection

Exposure limits

Ingredient(s)	Exposure Limits
Alkyl (50%C14, 40%C12, 10%C16) dimethyl benzyl ammonium chlorides	**ACGIH-TLV** Not established **OSHA-PEL** Not established
Ethanol	**ACGIH-TLV** TWA: 1000 ppm STEL: 1000 ppm **OSHA-PEL** TWA: 1000 ppm

Engineering controls General ventilation normally adequate.

Personal protective equipment

Eye / face protection Avoid contact with eyes.
Emergency responders should wear full eye and face protection.

Hand protection Wash hands after use.
Emergency responders should wear impermeable gloves.

Skin and body protection As required by employer code.
Emergency responders should wear impermeable clothing and footwear when responding to a situation where contact with the liquid is possible.

Respiratory protection Not normally required under normal use conditions.
Emergency responders should wear self-contained breathing apparatus (SCBA) to avoid inhalation of vapours generated by this product during a spill or other clean-up operations.

General hygiene considerations Handle in accordance with good industrial hygiene and safety practice.
When using do not eat or drink.
Washing with soap and water after use is recommended as good hygienic practice to prevent possible eye irritation from hand contact.

9. Physical and Chemical Properties

Appearance	Liquid saturated on wipe
Color	clear liquid
Form	Pre-moistened towelette.
Odor	Various
Odor threshold	Not available
Physical state	Not available
pH	6 - 8.5 (Liquid)
Freezing point	Not available
Pour point	Not available
Boiling point	Not available
Flash point	> 200 °F (> 93.33 °C) (Liquid) Tagliabue
Evaporation rate	Not available
Flammability limits in air, lower, % by volume	Not available
Flammability limits in air, upper, % by volume	Not available
Vapor pressure	Not available
Vapor density	Not available
Specific gravity	0.97 (Liquid)
Octanol/water coefficient	Not available
Solubility (H2O)	Wipe is not soluble
Auto-ignition temperature	Not available

10. Stability and Reactivity

Chemical stability	Stable under recommended storage conditions.
Conditions to avoid	DO NOT MIX WITH BLEACH or use in conjunction with other household products. Heat, open flames, static discharge, sparks and other ignition sources.
Incompatible materials	Oxidizers.
Hazardous decomposition products	May include and are not limited to: Oxides of carbon. Oxides of nitrogen.
Possibility of hazardous reactions	Hazardous polymerization does not occur.

11. Toxicological Information

Component analysis - LC50

Ingredient(s)	LC50
Alkyl (50%C14, 40%C12, 10%C16) dimethyl benzyl ammonium chlorides	Not available
Ethanol	31623 ppm rat

Component analysis - Oral LD50

Ingredient(s)	LD50
Alkyl (50%C14, 40%C12, 10%C16) dimethyl benzyl ammonium chlorides	426 mg/kg rat
Ethanol	3450 mg/kg mouse; 7060 mg/kg rat

Effects of acute exposure

Eye	May irritate eye.
Skin	Non-irritating to the skin.
Inhalation	None expected.
Ingestion	Not orally toxic.

Sensitization	The finished product is not expected to have chronic health effects.
Chronic effects	The finished product is not expected to have chronic health effects.
Carcinogenicity	The finished product is not expected to have chronic health effects.

ACGIH - Threshold Limit Values - Carcinogens

Ethanol	64-17-5	A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans

Mutagenicity	The finished product is not expected to have chronic health effects.
Reproductive effects	The finished product is not expected to have chronic health effects.
Teratogenicity	The finished product is not expected to have chronic health effects.
Synergistic Materials	Not available

12. Ecological Information

Ecotoxicity	Components of this product have been identified as having potential environmental concerns.

Ecotoxicity - Freshwater Fish Species Data

Ethanol	64-17-5	96 Hr LC50 Oncorhynchus mykiss: 12.0-16.0 ml/L [static]; 96 Hr LC50 Pimephales promelas: >100 mg/L [static]; 96 Hr LC50 Pimephales promelas: 13400-15100 mg/L [flow-through]

Ecotoxicity - Water Flea Data

Ethanol	64-17-5	48 Hr LC50 Daphnia magna: 9268 - 14221 mg/L; 24 Hr EC50 Daphnia magna: 10800 mg/L; 48 Hr EC50 Daphnia magna: 2 mg/L [Static]

Environmental effects	Not available
Aquatic toxicity	Not available
Persistence / degradability	Not available
Bioaccumulation / accumulation	Not available
Partition coefficient	Not available
Mobility in environmental media	Not available
Chemical fate information	Not available

13. Disposal Considerations

Waste codes	Not available
Disposal instructions	Do not reuse empty container. Rinse container and offer for recycling where facilities exist. Review federal, state/provincial, and local government requirements prior to disposal. Discard with solid waste.
Waste from residues / unused products	Not available
Contaminated packaging	Not available

14. Transport Information

UN/ID N.o. Not applicable

U.S. Department of Transportation (DOT): Classification: Not regulated

Proper shipping name	Not applicable
U.S. DOT Hazard Class	Not applicable
Subsidiary Risk	Not applicable
Packing group	Not applicable
DOT RQ (lbs)	Not applicable
ERG NO	Not applicable

Transportation of Dangerous Goods (TDG - Canada): Classification: Not regulated

Proper shipping name	Not applicable
Status	Not applicable
Packing group	Not applicable

IMDG (Marine Transport): Classification: Not regulated

Proper shipping name	Not applicable
Class	Not applicable
Subsidiary Risk	Not applicable
Packing group	Not applicable
IMDG Page	Not applicable
Marine pollutant	Not applicable
EMS	Not applicable
MFAG	Not applicable
Maximum Quantity	Not applicable

IATA/ICAO (Air): Classification: Not regulated

Proper shipping name	Not applicable
Class	Not applicable
Subsidiary Risk:	Not applicable
Packing group	Not applicable
Maximum Quantity	Not applicable

15. Regulatory Information

US Federal regulations

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
CERCLA/SARA Hazardous Substances - Not applicable.

Product Registration: Registered with EPA, EPA Reg. No. 777-68

Occupational Safety and Health Administration (OSHA)

29 CFR 1910.1200 hazardous chemical	Yes

CERCLA (Superfund) reportable quantity

None

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories	Immediate Hazard - Yes Delayed Hazard - No Fire Hazard - No Pressure Hazard - No Reactivity Hazard - No
Section 302 extremely hazardous substance	No
Section 311 hazardous chemical	Yes
Clean Air Act (CAA)	Not available
Clean Water Act (CWA)	Not available
State regulations	This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

U.S. - Massachusetts - Right To Know List

Ethanol	64-17-5	Teratogen

U.S. - Minnesota - Hazardous Substance List

Ethanol	64-17-5	Present

U.S. - New Jersey - Right to Know Hazardous Substance List

Ethanol	64-17-5	sn 0844

U.S. - Pennsylvania - RTK (Right to Know) List

Ethanol	64-17-5	Present

U.S. - Rhode Island - Hazardous Substance List

Ethanol	64-17-5	Toxic; Flammable

Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

16. Other Information

Disclaimer	This product should only be used as directed on the label and for the purpose intended. To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.
Further information	19200-81145-3 - LYSOL® Brand (Kills 99.9% of Viruses & Bacteria) Disinfecting Wipes, All Scents - 35 ct - Citrus - 0059368 19200-77182-5 - LYSOL® Brand (Kills 99.9% of Viruses & Bacteria) Disinfecting Wipes, All Scents - 80 ct - Citrus - 0059368 19200-81360-0 - LYSOL® Brand (Kills 99.9% of Viruses & Bacteria) Disinfecting Wipes, All Scents - 2x35 ct. - Citrus - 0059368 19200-80296-3 - LYSOL® Brand (Kills 99.9% of Viruses & Bacteria) Disinfecting Wipes, All Scents - 2x80 ct - Citrus - 0059368 19200-78849-6- LYSOL® Brand (Kills 99.9% of Viruses & Bacteria) Disinfecting Wipes, All Scents - 110 ct - Citrus - 0059368 19200-81146-0 - LYSOL® Brand (Kills 99.9% of Viruses & Bacteria) Disinfecting Wipes, All Scents - 35 ct - Spring Waterfall - 0059302 19200-77925-8 - LYSOL® Brand (Kills 99.9% of Viruses & Bacteria) Disinfecting Wipes, All Scents - 80 ct - Spring Waterfall - 0059302
Issue date	09-Jul-2010
Effective date	15-Jun-2010
Prepared by	Reckitt Benckiser Regulatory Department 800-333-3899
Other information	For an updated MSDS, please contact the supplier/manufacturer listed on the first page of the document.

Commercial Products Group
CPG TN 6
2 Procter & Gamble Plaza
Cincinnati, OH 45202

HMIS®
Health 1
Flammability 0
Reactivity 0

MATERIAL SAFETY DATA SHEET

Issue Date: 2/99

SECTION I

Emergency Telephone Number: Procter & Gamble Operator 1-513-983-1100
Identity: **MR. CLEAN All-Purpose Cleaner**
Ingredients/Chemical Name: Cleaning agents (nonionic and anionic surfactants), quality control agents, perfume, colorant and water.
Other: N.A.

SECTION II - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

Hazardous Ingredients as defined by OSHA, 29 CFR 1910. 1200.

Chemical Name	Common Name	CAS No.	ACGIH TLV	OSHA PEL	Other Limits Recommended
alcohol ethoxylates	nonionic surfactant		see Section V - Health and Safety Data		

DOT Classification: Not regulated

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

Boiling point: N.A.
Vapor Pressure (mm Hg): N.A.
Vapor Density (Air=1): N.A.
Solubility in Water: Complete
pH: 9.0 10.0
Specific Gravity (H_2O=1): 1.048 g/cc
Percent Volatile by Volume (%): N.A.
Evaporation Rate (nBuOAc=1): N.A.
Appearance and Odor: Clear yellow liquid with lemon fragrance

SECTION IV - FLAMMABILITY AND REACTIVITY

Flash Point (Method Used): over 200°F (cc)
Explosive Limits: *LEL*: N.A. *UEL*: N.A.
Extinguishing Media: Use CO_2, water, dry chemical or "alcohol" foam.
Special Fire Fighting Procedures: Use water to keep fire exposed containers cool.
Unusual Fire Hazards: None Known
Stability *Unstable*: *Conditions to Avoid*: None Known
Stable: X
Incompatibility (Materials to avoid): None Known
Hazardous Decomposition/By Products: None Known
Hazardous Polymerization *May Occur*: *Conditions to Avoid*: None
Will Not Occur: X

SECTION V - HEALTH AND SAFETY DATA

Route(s) of Entry: Skin contact, eye contact, ingestion and inhalation.
Health Hazards (Acute and Chronic): Mild skin and eye irritant. May be harmful if swallowed.
Signs and Symptoms of Exposure: Instillation into the eyes may result in transient superficial effects similar to those produced by mild toilet soaps and detergents. Ingestion may result in transient nervous system effects (ataxia and muscle weakness) and/or gastrointestinal irritation with nausea, vomiting or diarrhea. This product contains alcohol ethoxylates. Large ingestions (>2ml/kg) may also cause symptoms of alcohol-like intoxications, incoordination, drowsiness, inarticulateness or ataxia. Alcohol ethoxylates may contribute to Central Nervous System symptoms.
Medical Conditions Generally Aggravated by Exposure: Use on irritated or extremely dry skin may aggravate the existing conditions.
Emergency and First Aid Procedures: ***Eye Contact***: Flush thoroughly with water. ***Ingestion***: Dilute with fluids and call a physician. ***Skin Irritation***: Rinse exposed area and discontinue use. Remove contaminated clothing.
Other: N.A.

SECTION VI - PRECAUTIONS FOR SAFE HANDLING AND USE

Precautions to be Taken in Handling and Storing: Store in a cool, dry, well ventilated area.
Other precautions: None required
Steps to Be Taken in Case Material is Released or Spilled: Use water spray to dilute and/or wash away spills to avoid exposure and to protect persons working to stop/repair leak.
Waste Disposal Method: Do not landfill. Small (household) quantities may be disposed of via sewer. Incineration is preferred where permitted by federal, state and local regulations. Disposal is to be performed in compliance with all regulations.

SECTION VII - SPECIAL PROTECTION INFORMATION

Respiratory Protection (Specify Type): None required.

Ventilation	*Local Exhaust*: None required	*Special*: None
	Mechanical (General): Acceptable	*Other*: None
Eye Protection: None required with normal use. If splash is possible use goggles.		**Protective Gloves**: None required with normal use.

Other Protective Equipment: None required; in industrial setting eye wash fountain desirable.

*N.A. - Not Applicable *N.K. - Not Known

The submission of this MSDS may be required by law, but this is not an assertion that the substance is hazardous when used in accordance with proper safety practices and normal handling procedures. Data supplied is for use only in connection with occupational safety and health.

Material Safety Data Sheet

according to ANSI Z400.1- 2004 and 29 CFR 1910.1200

PLEDGE® CLEAN & DUST FURNITURE POLISH

Version *1.*

Print Date 06/02/2009

Revision Date 05/26/2009

MSDS Number 350000003639

1. PRODUCT AND COMPANY IDENTIFICATION

Product information

Trade name	:	PLEDGE® CLEAN & DUST FURNITURE POLISH
Use of the Substance/Preparation	:	Furniture Polish/Cleaner
Company	:	S.C. Johnson & Son, Inc. 1525 Howe Street Racine WI 53403-2236
Emergency telephone	:	24 Hour Transport & Medical Emergency Phone (866) 231-5406 24 Hour International Emergency Phone (952) 852-4647

2. HAZARDS IDENTIFICATION

Emergency Overview

Appearance / Odor	:	white / aerosol / pleasant
Immediate Concerns	:	Caution CONTENTS UNDER PRESSURE. Do not puncture or incinerate. Keep away from heat, sparks and flame. Do not store at temperatures above 120 Deg. F (50 Deg C), as container may burst.

Potential Health Effects

Routes of exposure	:	Eye, Skin, Inhalation, Ingestion.
Eyes	:	No adverse effects expected when used as directed.
Skin	:	No adverse effects expected when used as directed.
Inhalation	:	No adverse effects expected when used as directed.
Ingestion	:	No adverse effects expected when used as directed.
Aggravated Medical Condition	:	None known.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No.	Weight %
Water	7732-18-5	60.00 - 100.00
Naphtha, petroleum, light alkylate	64741-66-8	5.00 - 10.00
Dimethicone	63148-62-9	5.00 - 10.00
Butane	106-97-8	1.00 - 5.00

Isobutane	75-28-5	1.00 - 5.00
Propane	74-98-6	1.00 - 5.00

4. FIRST AID MEASURES

Eye contact	:	Rinse with plenty of water.
Skin contact	:	Wash off with soap and water.
Inhalation	:	Remove to fresh air. If breathing is affected, get medical attention.
Ingestion	:	If swallowed, DO NOT induce vomiting unless directed to do so by medical personnel. Drink 1 or 2 glasses of water. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician or Poison Control Centre immediately.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	:	Alcohol foam, carbon dioxide, dry chemical, water fog,
Specific hazards during fire fighting	:	Aerosol Product - Containers may rocket or explode in heat of fire.
Further information	:	Cool and use caution when approaching or handling fire-exposed containers. Fight fire from maximum distance or protected area. Wear full protective clothing and positive pressure self-contained breathing apparatus.
Flash point	:	< 20 °F Method: Tag Closed Cup (TCC)
Flash point	:	< -7 °C Method: Tag Closed Cup (TCC)
Lower explosion limit	:	Note: no data available
Upper explosion limit	:	Note: no data available
NFPA Classification	:	NFPA Level 1 Aerosol

6. ACCIDENTAL RELEASE MEASURES

Personal precautions	:	Remove all sources of ignition.
Methods for cleaning up	:	Soak up with inert absorbent material. Sweep up and shovel into suitable containers for disposal.

After cleaning, flush away traces with water.

7. HANDLING AND STORAGE

Handling

Advice on safe handling : Use only as directed.
KEEP OUT OF REACH OF CHILDREN AND PETS.
Do not puncture or incinerate.
Do not spray or use on floors as it could leave them slippery.

Advice on protection against fire and explosion : Keep away from heat and sources of ignition.

Storage

Requirements for storage areas and containers : Keep in a dry, cool and well-ventilated place.
Do not freeze.
Do not store at temperatures above 120 Deg. F (50 Deg C), as container may burst.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits

Components	CAS-No.	mg/m3	ppm	Basis
Butane	106-97-8	-	1,000 ppm	ACGIH TWA
Isobutane	75-28-5	-	1,000 ppm	ACGIH TWA
Propane	74-98-6	-	1,000 ppm	ACGIH TWA
Propane	74-98-6	1,800 mg/m3	1,000 ppm	OSHA TWA

Personal protective equipment

Respiratory protection

Industrial setting : No personal respiratory protective equipment normally required.

Household setting : No personal respiratory protective equipment normally required.

Hand protection

Industrial setting : not required under normal use

Household setting	:	not required under normal use

Eye protection

Industrial setting	:	No special requirements.
Household setting	:	No special requirements.
Hygiene measures	:	Use only with adequate ventilation. Wash thoroughly after handling.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form	:	aerosol
Color	:	white
Odor	:	pleasant
pH	:	not applicable
Melting point	:	no data available
Boiling point	:	no data available
Freezing point	:	no data available
Flash point	:	< 20 °F Method: Tag Closed Cup (TCC)
Flash point	:	< -7 °C Method: Tag Closed Cup (TCC)
Evaporation rate	:	no data available
Autoignition temperature	:	no data available
Lower explosion limit	:	no data available
Upper explosion limit	:	no data available
Vapour pressure	:	no data available
Water solubility	:	dispersible
Partition coefficient: n-octanol/water	:	no data available
Specific Gravity	:	0.91 - 0.92

PLEDGE® CLEAN & DUST FURNITURE POLISH

Version *1.*
Print Date 06/02/2009
Revision Date 05/26/2009
MSDS Number 350000003639

10. STABILITY AND REACTIVITY

Conditions to avoid	:	Heat, flames and sparks.
Materials to avoid	:	None.
Hazardous decomposition products	:	When exposed to fire, produces normal products of combustion.
Hazardous reactions	:	Stable

11. TOXICOLOGICAL INFORMATION

Acute oral toxicity	:	LD50 Dose: estimated > 20,000 mg/kg
Acute inhalation toxicity	:	LC50 rat Dose: > 208 mg/l
Acute dermal toxicity	:	no data available

Chronic effects

Carcinogenicity	:	no data available
Mutagenicity	:	no data available
Reproductive effects	:	no data available
Teratogenicity	:	no data available
Sensitisation	:	no data available

12. ECOLOGICAL INFORMATION

Ecotoxicity effects	:	Not Available

13. DISPOSAL CONSIDERATIONS

Industrial setting	:	Observe all applicable Federal, Provincial and State regulations and Local/Municipal ordinances regarding disposal.

Household setting : Consumer may discard empty container in trash, or recycle where facilities exist.

14. TRANSPORT INFORMATION

Land transport

- **U.S. DOT and Canadian TDG Surface Transportation:**

UN-Number	1950
Proper shipping name	Aerosols, Flammable
Class:	2.1
Packaging group:	None.
Note:	SC Johnson ships this product as Consumer Commodity ORM-D (non-bulk packages)

Sea transport

- *IMDG:*

Class:	2.1
Packaging group:	None.
Proper shipping name	Aerosols, Flammable
UN-Number:	1950
Note:	SC Johnson ships this product as "Limited Quantity" when the container quantity value is 1 Liter or less.

Air transport

- *ICAO/IATA:*

Class:	2.1
Packaging group:	None.
Proper shipping name	Aerosols, Flammable
UN/ID No.:	UN 1950
Note:	SC Johnson typically does not ship products via air, therefore it has not been determined if the product container meets current IATA/ICAO package criteria. Refer to IATA/ICAO Dangerous Goods Regulations for detailed instructions when shipping this item by air.

15. REGULATORY INFORMATION

Global Chemical Inventories

Notification status : All ingredients of this product are listed or are excluded from

listing on the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.

: All ingredients of this product comply with the New Substances Notification requirements under the Canadian Environmental Protection Act (CEPA).

California Prop. 65 : This product is not subject to the reporting requirements under California's Proposition 65.

: This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

16. OTHER INFORMATION

HMIS Ratings

Health	1
Flammability	4
Reactivity	0

NFPA Ratings

Health	1
Fire	4
Reactivity	0
Special	

Further information

This document has been prepared using data from sources considered to be technically reliable. It does not constitute a warranty, expressed or implied, as to the accuracy of the information contained herein. Actual conditions of use are beyond the seller's control. User is responsible to evaluate all available information when using product for any particular use and to comply with all Federal, State, Provincial and Local laws and regulations.

PLEDGE® CLEAN & DUST FURNITURE POLISH

Version *1.*

Print Date 06/02/2009

Revision Date 05/26/2009

MSDS Number 350000003639

Prepared by:	SC Johnson Global Safety Assessment & Regulatory Affairs (GSARA)

MATERIAL SAFETY DATA SHEET

MSDS # 111667003

RAID® FLYING INSECT KILLER FORMULA 6

Date Issued: 21May2002 **Superseles: 27Feb2002**

US MANUFACTURER:
S.C. Johnson & Son, Inc.
Phone: (800) 725-6737
Racine, Wisconsin 53403-2236
Emergency Phone: (888) 779-7920
International Emergency Phone:
(262) 886-1480

CANADIAN MANUFACTURER:
S.C. Johnson and Son, Limited
Phone: (800) 725-6737
1 Webster Street
Brantford, Ontario N3T 5R1
Transportation Emergency:
CANUTEC (collect) (613) 996-6666
Poison Control: (888) 779-7920

HAZARD RATING	HMIS	HAZARD	NFPA
4-Very High	0	Health	0
3-High	4	Flammability	4
2-Moderate	0	Reactivity	0
1-Slight		Special	
0-Insignificant			

DISTRIBUTED IN CANADA BY:
S.C. Johnson and Son, Limited
Phone: (800) 725-6737
1 Webster Street
Brantford, Ontario N3T 5R1

SECTION 1 - PRODUCT IDENTIFICATION

PRODUCT NAME..... RAID® FLYING INSECT KILLER FORMULA 6
REASON FOR CHANGE..... No significant changes.
PRODUCT USE..... Household: Insecticide

SECTION 2 - INGREDIENT INFORMATION

INGREDIENT	WEIGHT%	EXPOSURE LIMIT / TOXICITY
D-cis trans allethrin	0.10	NOT ESTABLISHED
Permethrin	0.10	NOT ESTABLISHED
Tetramethrin	0.35	NOT ESTABLISHED
INERT INGREDIENTS	99.45	NOT ESTABLISHED

SECTION 3 - HEALTH HAZARDS IDENTIFICATION (Also See Section 11)

ROUTE(S) OF ENTRY..... Eye contact. Skin contact. Inhalation.
EFFECTS OF ACUTE EXPOSURE:
EYE..... None known.
SKIN..... Harmful if absorbed through skin.
INHALATION..... None known.
INGESTION..... None known.
MEDICAL CONDITIONS..... None known.
GENERALLY RECOGNIZED
AS BEING AGGRAVATED
BY EXPOSURE

SECTION 4 - FIRST AID MEASURES

EYE CONTACT..... No special requirements.
SKIN CONTACT..... Wash contaminated area with water and soap. If irritation persists, get medical attention.
INHALATION..... No special requirements.
INGESTION..... No special requirements.

SECTION 5 - FIRE AND EXPLOSION INFORMATION

FLASH POINT..... < 20°F (< -7°C) (TCC) (propellant)

RAID® FLYING INSECT KILLER FORMULA 6

Date Issued: 21May2002 **Supersedes: 27Feb2002**

SECTION 5 - FIRE AND EXPLOSION INFORMATION (continued)

FLAMMABLE LIMITS	Not available.
AUTOIGNITION TEMPERATURE	Not applicable.
EXTINGUISHING MEDIA	Foam. CO2. Dry chemical. Water fog.
SPECIAL FIREFIGHTING PROCEDURES	Fight fire from maximum distance or protected area. Cool and use caution when approaching or handling fire-exposed containers. Fire fighters should wear self-contained breathing apparatus and protective clothing.
UNUSUAL FIRE AND EXPLOSION HAZARDS	Aerosol product - Containers may rocket or explode in heat of fire.

SECTION 6 - PREVENTIVE RELEASE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	Eliminate all ignition sources. Dike large spills. Absorb with oil-dri or similar inert material. Sweep or scrape up and containerize.

SECTION 7 - HANDLING AND STORAGE

PRECAUTIONARY INFORMATION	CAUTION: Harmful if absorbed through skin. Keep out of reach of children. Avoid contact with skin, eyes and clothing. Do not remain in enclosed areas after use. Ventilate enclosed areas before returning. Avoid contact with food or drink. Remove plants, pets, birds and cover and turn off fish aquariums before spraying. Wash hands thoroughly after handling. CONTENTS UNDER PRESSURE. Do not use near open fire, flames or heat. Do not puncture or incinerate. Do not store at temperatures above 120 °F (50 °C).
OTHER HANDLING AND STORAGE CONDITIONS	Keep out of reach of children.

SECTION 8 - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION	If ventilation is adequate, respiratory protection not required.
VENTILATION	General room ventilation is normally adequate. Substantial amounts of mists/vapors can be controlled with local exhaust ventilation or respiratory protection.
PROTECTIVE GLOVES	No special requirements under normal use conditions.
EYE PROTECTION	No special requirements under normal use conditions.
OTHER PROTECTIVE MEASURES	If major exposure is possible to eyes/skin, wear/use appropriate protective equipment.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

COLOR	Straw-colored
PRODUCT STATE	Dispensed as a spray mist.
ODOR	Clean Floral
pH	5.5-8.0
ODOR THRESHOLD	Not available.
SOLUBILITY IN WATER	Slight.
SPECIFIC GRAVITY (H2O=1)	0.85
VISCOSITY	Not applicable
VAPOR DENSITY (AIR=1)	Not available.

RAID® FLYING INSECT KILLER FORMULA 6

Date Issued: 21May2002 **Supersedes: 27Feb2002**

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES (continued)

EVAPORATION RATE (BUTYL ACETATE=1)	Not available.
VAPOR PRESSURE (mm HG).	Not available.
BOILING POINT.	Not available.
FREEZING POINT	Not available.
COEFFICIENT OF. . . . . WATER/OIL	Not available.
PERCENT VOLATILE BY. . . . VOLUME (%)	> 98
VOLATILE ORGANIC. . . . . COMPOUND (VOC)	18.0-20.0 Hydrocarbon Propellant.
THEORETICAL VOC. . . . . (LB/GAL)	1.33-1.34 lb/gal

SECTION 10 - STABILITY AND REACTIVITY

STABILITY.	Stable
STABILITY - CONDITIONS. TO AVOID	None known.
INCOMPATIBILITY.	None known.
HAZARDOUS DECOMPOSITION PRODUCTS	When exposed to fire: Produces normal products of combustion.
HAZARDOUS. . . . . POLYMERIZATION	Will not occur.
HAZARDOUS. . . . . POLYMERIZATION - CONDITIONS TO AVOID	Not applicable.

SECTION 11 - TOXICOLOGY INFORMATION (Also See Section 3)

LD50 (ACUTE ORAL TOX). .	Not available.
LD50 (ACUTE DERMAL TOX)	Not available.
LC50 (ACUTE INHALATION. TOX)	Not available.
EFFECTS OF CHRONIC. . . . . EXPOSURE	None known.
SENSITIZATION.	None known.
CARCINOGENICITY.	None known.
REPRODUCTIVE TOXICITY. .	None known.
TERATOGENICITY.	None known.
MUTAGENICITY.	None known.

SECTION 12 - ECOLOGICAL INFORMATION

ENVIRONMENTAL DATA.	This product is toxic to fish. Do not discharge into lakes, streams, ponds or public water unless in accordance with an NPDES Permit. May be toxic to aquatic life.

SECTION 13 - DISPOSAL CONSIDERATIONS

WASTE DISPOSAL. . . . . INFORMATION	If possible, recycle empty aerosol can to nearest steel recycling center. Use up package or give to someone who can.

RAID® FLYING INSECT KILLER FORMULA 6

Date Issued: 21May2002 **Supersedes: 27Feb2002**

SECTION 14 - TRANSPORTATION INFORMATION

US DOT INFORMATION.....	Insecticides or insect repellents, N.O.I., other than poison Consumer commodity, ORM-D.
CANADIAN SHIPPING NAME.	RAID® FLYING INSECT KILLER FORMULA 6
TDG CLASSIFICATION.....	Non-regulated.
PIN/NIP.....	Not applicable.
PACKING GROUP.....	Not available.
EXEMPTION NAME.....	Not applicable.

SECTION 15 - REGULATORY INFORMATION

WHMIS CLASSIFICATION...	Non-regulated.

All ingredients of this product are listed or are excluded from listing on the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.

All ingredients in this product comply with the New Substances Notification requirements under the Canadian Environmental Protection Act (CEPA).

This product is not subject to the reporting requirements under California's Proposition 65.

SECTION 16 - OTHER INFORMATION

ADDITIONAL INFORMATION.	NFPA 30B Level 1 Aerosol.
EPA REGISTRATION #.....	4822-513

PREPARATION INFORMATION

PREPARED BY.....	Manufacturer's Technical Support Department. Refer to page 1 (Manufacturer) for contact information.

This document has been prepared using data from sources considered technically reliable. It does not constitute a warranty, express or implied, as to the accuracy of the information contained herein. Actual conditions of use and handling are beyond seller's control. User is responsible to evaluate all available information when using product for any particular use and to comply with all Federal, State, Provincial and Local laws and regulations.

PRINT DATE: 27Jun2003

Material Safety Data Sheet

Section 1. Chemical Product and Company Identification

Product Name: Rug Doctor OxySteam

Manufacturer: Rug Doctor, LP
4701 Old Shepard Place
Plano, TX 75093.

Emergency Number: 800-784-3628

Information: 800-784-3628

Date Prepared: 10/01/2007

Issue Date: 4/14/09

Signature of Preparer: SP

Section 2. Composition/Information on Ingredients

No hazardous components at supplied dilution by OSHA/DOT definition.
None of the components present in this material at concentrations greater than 0.01% are listed by the IARC, NTP, OSHA or ACGIH as a carcinogen

Section 3. Hazards Identification

Emergency Overview

Potential Health Effects

Eye	Non-Irritant
Skin	Non Irritant & Nontoxic
Ingestion	Non-Toxic
Inhalation	N/D
Chronic/Carcinogenicity	None known
Teratology	N/D
Reproduction	N/D
Mutagenicity	N/D

Section 4. First Aid Measures

Eye	Flush eyes with water for 15 minutes
Skin	Wash skin with soap and water. Remove contaminated clothing.
Ingestion	Tested non-toxic. If nausea or abdominal discomfort experienced after ingestion, please consult a physician.
Inhalation	Not Tested

Material Safety Data Sheet

Section 5. Fire Fighting Measures

Flammable Properties	Not Flammable
Flammable Limits	N/A
Autoignition Temperature	N/A
Hazardous Combustion Products	N/A
Extinguishing Media	N/A
Fire Fighting Instructions	N/A

Section 6. Accidental Release Measures

Small Spill	Flush to sewer with large volume of water.
Large Spill	Contain with absorbent material. Transfer to container for disposal.

Section 7. Handling and Storage

Handling	Use proper protective equipment while handling. Keep container closed. Clean up all spills. Do not get in eyes, skin or clothing.
Storage	Protect from freezing

Section 8. Exposure Controls, Personal Protection

Engineering Controls	Moderate ventilation
Respiratory Protection	N/A
Skin Protection	Nitrile Gloves for prolonged exposure, Apron
Eye Protection	Goggles, eye safety shower.

Permissible Exposure Levels (see also Section 2)

N/A

Section 9. Physical and Chemical Properties

Boiling Point	212 F	Specific Gravity (H2O = 1)	1.02
Vapor Pressure (mm Hg)	N/D	Melting Point	N/A
Vapor Density (AIR = 1)	N/D	Evaporation rate (Butyl Acetate = 1)	N/D
Solubility in Water	>99%	Physical State	liquid
Appearance and Odor	Cloudy liquid with a Lemon odor	Other	

Material Safety Data Sheet

Section 10. Stability and Reactivity

Chemical Stability	Stable
Incompatibility	Contact with strong alkali will destroy the cleaning efficiency.
Hazardous Decomposition Products	None
Hazardous Polymerization	Will not occur

Section 11. Toxological Information

None currently available

Section 12. Ecological Information

None currently available

Section 13. Disposal Considerations

Dispose in accordance with all Federal, State and Local laws.

Section 14. Transport Information

Proper Shipping Name:Not Regulated by DOT
Hazard Class: none

Section 15. Regulatory Information

N/A

Section 16. Other Information

HAZARD RATING	HMIS	NFPA
HEALTH	0	0
FLAMMABILITY	0	0
REACTIVITY	0	0
PPE	N/A	N/A

The above information is provided in good faith and is believed to be accurate. However, Rug Doctor, LP disclaims all liability from reliance thereon. It is the responsibility of the user to determine suitability for a particular use.

The Clorox Company
7200 Johnson Drive
Pleasanton, California 94566
Tel. (510) 847-6100

Material Safety Data Sheet

COM-01613

I Product: SOFT SCRUB WITH BLEACH CLEANSER

Description: WHITE, VISCOUS, FRAGRANCED LIQUID

Other Designations	Manufacturer	Emergency Telephone No.
SOFT SCRUB MILD ABRASIVE CLEANSER WITH BLEACH	The Clorox Company 1221 Broadway Oakland, CA 94612	*For Medical Emergencies, call* Rocky Mountain Poison Center: 1-800-446-1014 For Transportation Emergencies, call: Chemtrec: 1-800-424-9300

II Health Hazard Data

Eye irritant. May be irritating to skin. Some clinical reports suggest a low *potential for sensitization upon exaggerated exposure to sodium hypochlorite if skin damage (e.g. irritation) occurs during exposure.*

No medical conditions are known to be aggravated by exposure to this product.

FIRST AID:

EYE CONTACT: Flush eyes thoroughly with water for at least 15 minutes; then call a physician.

SKIN CONTACT: Wash skin with water.

INGESTION: Drink a glassful of water; then call a physician.

INHALATION: Remove to fresh air. If irritation or breathing problems persist, call a physician.

III Hazardous Ingredients

Ingredient	Concentration	Worker Exposure Limit
Calcium carbonate CAS # 1317-65-3	5 - 20%	10 mg/m³ - TLV-TWA* *(total dust)* 5 mg/m³ - PEL* (respirable fraction)
Aluminum distearate CAS# 300-92-5	0 - 1%	10 mg/m³ TLV-TWA*
Sodium hypochlorite CAS # 7681-52-9	0.5 - 2%	Not established.
Sodium hydroxide CAS # 1310-73-2	< 1%	*2 mg/m³ - TLV-Ceiling limit**

*TLV-TWA = ACGIH Threshold Limit Value-Time Weighted Average.
*PEL = OSHA Permissible Exposure Limit.
*TLV-Ceiling limit = *ACGIH Threshold Limit Value-Ceiling limit.*

None of the materials in this product are on the IARC, OSHA, or NTP carcinogen lists.

IV Special Protection and Precautions

Hygienic Practices: Wash hands after direct contact. Do not wear product-contaminated clothing for prolonged periods.

Engineering Controls: None specified.

Personal Protective Equipment: Wear safety glasses. Wear nitrile, *neoprene or natural rubber gloves if handling product for prolonged or* repeated periods.

KEEP OUT OF THE REACH OF CHILDREN

V Transportation and Regulatory Data

DOT/IATA/IMO: Not restricted.

DOT Proper Shipping Name: Hypochlorite solution with less than 5% available chlorine.

TSCA Status: All components of this product are on the TSCA inventory.

EPA - SARA Title III/CERCLA: This product is a hazardous chemical reportable under Sections 311/312; contains no chemicals regulated under Section 313; and contains chemicals (sodium hypochlorite ≤ 2% and sodium hydroxide ≤ 1%) which are regulated under Section 304/CERCLA.

VI Spill or Leak Procedures

Spill Procedures: Absorb and containerize. Wash residual down to sanitary sewer. Contact the sanitary treatment facility in advance to assure ability to process washed-down material.

Waste Disposal: Dispose of in accordance with all applicable federal, state, and local regulations.

VII Reactivity Data

Stable under normal use and storage conditions.

Reacts with other household chemicals such as acid toilet bowl cleaners, rust removers, acids, vinegar, and ammonia-containing products to produce hazardous gases, such as chlorine and other chlorinated compounds.

VIII Fire and Explosion Data

Not flammable or explosive.

IX Physical Data

pH ..... ~12.7
Specific gravity ..... ~1.3
Viscosity ..... 10000 - 15000 cP

DATE PREPARED 5/93

MATERIAL SAFETY DATA SHEET

1. MANUFACTURER / PRODUCT IDENTIFICATION

Product Identification

Product Name: Faultless® Regular Spray Starch
Product Number: 20806, 20505, 20508, 20801, 20812, 20815, 20833, 20844, 20925, 28806

Company Identification

Faultless Starch / Bon Ami Co.
1025 W 8th Street
Kansas City, MO 64101 USA
1-816-842-1230 (For product information)
1-800-424-9300 (For emergencies)

Reason For Issue...: Update MSDS date
Approval Date.....: October 4, 2004
Supercedes Date....: March 19, 2003
MSDS Number.....: 20806
RTN Number.....: 00020806 (Official Copy)

NFPA Rating:
Health - 1, Flammability - 0, Reactivity - 1

2. HAZARDOUS INGREDIENTS

Chemical Name	Amount	CAS Number
BUTANE	Confidential	106-97-8
PROPANE	Confidential	74-98-6
ISOBUTANE	Confidential	75-28-5

EXPOSURE GUIDELINES:

BUTANE
OSHA PEL: 800 ppm

PROPANE
OSHA PEL: 1000 ppm

3. PHYSICAL / CHEMICAL CHARACTERISTICS

FORM	Aerosol
COLOR	Clear to hazy
ODOR	Pleasant
BOILING POINT	212 F
SOLUBILITY IN WATER ...	95% - 96%
SPECIFIC GRAVITY	1.008 g/ml (Water = 1)
PH	~8.5

4. FIRE AND EXPLOSION HAZARD DATA

FLAMMABLE PROPERTIES
COC Flash Point: N/A
Autoignition Temperature: N/A

FLAMMABLE LIMITS IN AIR
LEL: N/A
UEL: N/A

EXTINGUISHING MEDIA:
Water, carbon dioxide, foam or dry powder.

SPECIAL FIRE FIGHTING PROCEDURES:
Use procedures recommended when aerosols are present.

UNUSUAL FIRE AND EXPLOSION HAZARDS:
As with all aerosols, fire or excessive heat can cause containers to rupture.

5. REACTIVITY DATA

STABILITY:
Stable.

CONDITIONS TO AVOID:
Exposure to heat.

INCOMPATIBILITY (MATERIALS TO AVOID):
Oxygen and strong oxidizing materials.

HAZARDOUS DECOMPOSITION OR BYPRODUCTS:
If incinerated, carbon dioxide and carbon monoxide will be generated.

(section 5 continued)

HAZARDOUS POLYMERIZATION:
Will not occur.

6. HEALTH HAZARD DATA

INHALATION RISKS AND SYMPTOMS OF EXPOSURE:
No hazard in normal industrial use.

SKIN / EYE CONTACT RISKS AND SYMPTOMS OF EXPOSURE:
Not a skin or eye irritant.

SKIN ABSORPTION RISKS AND SYMPTOMS OF EXPOSURE:
None known.

INGESTION RISKS AND SYMPTOMS OF EXPOSURE:
Not toxic according to Federal Hazardous Substance and Labeling Act.

HEALTH HAZARDS (ACUTE AND CHRONIC):
Not an eye, skin, or respiratory irritant, nor toxic by ingestion according to Federal Hazardous Substances & Labeling Act Regulations. No health hazards known after many years of constant exposure to production employees, laboratory personnel, and consumers.

CARCINOGENICITY INFORMATION:
Not listed by IARC or NTP as a carcinogen.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:
None known.

EYE CONTACT FIRST AID:
Hold eyelids apart and flush eyes with plenty of water for at least 15 minutes.

INHALATION FIRST AID:
No specific treatment is necessary since this material is not likely to be hazardous by inhalation.

7. PRECAUTIONS FOR SAFE HANDLING AND USE

ACTIONS IF MATERIAL IS RELEASED OR SPILLED:
No special requirements.

(section 7 continued)

WASTE DISPOSAL METHOD:
No special method required. Liquid can be flushed into sewer because no hazardous materials are contained in the liquid phase.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:
Contents under pressure. Do not expose to heat or store at temperatures above 120 Deg F (as required with all aerosols). Use reasonable care when using.

OTHER PRECAUTIONS:
Avoid spraying into eyes and inhaling spray. Read and follow label CAUTIONS carefully.

8. CONTROL MEASURES

RESPIRATORY PROTECTION:
Not required.

VENTILATION:
All aerosol products should be used with adequate ventilation.

PROTECTIVE GLOVES:
Not required.

EYE PROTECTION:
Recommend approved safety glasses.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT:
None required.

WORK / HYGIENIC PRACTICES:
Observe resonable care, cleanliness, and caution.

9. TRANSPORTATION INFORMATION

PRODUCT LABEL.....: Faultless® Regular Spray Starch
D.O.T. SHIPPING NAME...: Consumer Commodity
D.O.T. HAZARD CLASS....: ORM-D
UN NUMBER.....: N/A

10. REGULATORY INFORMATION

CHEMICAL INVENTORY INFORMATION:
This material or all of its components are listed on the Inventory of Existing Chemical Substances under the Toxic Substance Control Act (TSCA).

MISCELLANEOUS INFORMATION:
No toxic chemical(s) subject to the reporting requirements of section 313 Title III and of 40 CFR 372 are present.

11. DISCLAIMER

****
The information accumulated herein is believed to be accurate but is not warranted to be whether originating with the company or not. Recipients are advised to confirm in advance of need that the information is current, applicable and suitable to their circumstances.

****
END OF MSDS
****

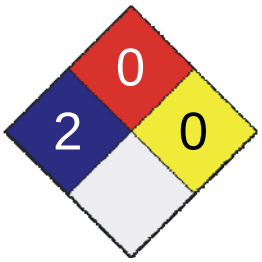
MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Product Name	**WOOLITE - Extra Delicate Care**
UPC CODES	Refer to Section 16
CAS #	Mixture
Product use	Laundry detergent
Distributed by	Reckitt Benckiser Morris Corporate Center IV 399 Interpace Parkway P.O. Box 225 Parsippany, NJ 07054-0225 In Case of Emergency: 1-800-228-4722 Transportation Emergencies: 24 Hour Number: North America: CHEMTREC: 1-800-424-9300 Outside North America: 1-703-527-3887

LEGEND HMIS/NFPA	
Severe	4
Serious	3
Moderate	2
Slight	1
Minimal	0

Health	/	2
Flammability		0
Physical Hazard		0
Personal Protection		B



2. Hazards Identification

Emergency overview

WARNING
EYE IRRITANT. MAY BE HARMFUL IF SWALLOWED.
DO NOT get in eyes.
May be severely irritating to eyes.
DO NOT ingest.
Avoid contact with skin.
Contains surfactants.

KEEP OUT OF REACH OF CHILDREN.

Potential short term health effects

Routes of exposure	Eye, Skin contact, Inhalation, Ingestion.
Eyes	Irritating to eyes.
Skin	Non-irritating to the skin. Not expected to be a skin sensitizer.
Inhalation	May cause respiratory tract irritation.
Ingestion	May be harmful if swallowed.
Target organs	Eyes. Respiratory system. Skin.
Chronic effects	Prolonged or repeated exposure can cause drying, defatting and dermatitis. The finished product is not expected to have chronic health effects.
Signs and symptoms	Symptoms may include redness, edema, drying, defatting and cracking of the skin. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.

3. Composition / Information on Ingredients

Ingredient(s)	CAS #	Percent
Benzenesulfonic acid, C10-16-alkyl derivatives	68584-22-5	2.5 - 10
Alcohols, C12-16, ethoxylated	68551-12-2	1 - 2.5
C10-16 alkyl ethers, sodium salts	68585-34-2	1 - 2.5
Fatty acids, C8-18 and C18-unsaturated	67701-05-7	1 - 2.5

4. First Aid Measures

First aid procedures	
Eye contact	If in eyes, IMMEDIATELY rinse with plenty of water. Remove contact lenses and continue to rinse eyes for at least 15 minutes. If irritation persists, get medical attention.
Skin contact	If on skin, rinse well with water.
Inhalation	Remove to fresh air. If symptoms persist, get medical attention.
Ingestion	If swallowed, rinse mouth and drink a glass of water. Do not induce vomiting. Call a physician or Poison Control Centre.
Notes to physician	Symptoms may be delayed.
General advice	If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Avoid contact with eyes and skin. Keep out of reach of children.

5. Fire Fighting Measures

Flammable properties	Not flammable by OSHA criteria.
Extinguishing media	
Suitable extinguishing media	Treat for surrounding material.
Unsuitable extinguishing media	Not available
Protection of firefighters	
Specific hazards arising from the chemical	Not available
Protective equipment for firefighters	Firefighters should wear full protective clothing including self contained breathing apparatus.
Hazardous combustion products	May include and are not limited to: Oxides of carbon.
Explosion data	
Sensitivity to mechanical impact	Not available
Sensitivity to static discharge	Not available

6. Accidental Release Measures

Personal precautions	Avoid contact with eyes. Keep unnecessary personnel away. Do not touch or walk through spilled material. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Keep people away from and upwind of spill/leak.
Methods for containment	Stop leak if you can do so without risk. Prevent entry into waterways, sewers, basements or confined areas.
Methods for cleaning up	Before attempting clean up, refer to hazard data given above. Small spills may be absorbed with non-reactive absorbent and placed in suitable, covered, labelled containers. Prevent large spills from entering sewers or waterways. Contact emergency services and supplier for advice. Never return spills in original containers for re-use.

7. Handling and Storage

Handling	Avoid contact with eyes. Do not ingest. Use good industrial hygiene practices in handling this material. When using do not eat or drink.
Storage	Keep out of reach of children. Store in a closed container away from incompatible materials. Store in a cool dry place inaccessible to children and pets.

8. Exposure Controls / Personal Protection

Exposure limits

Ingredient(s)	Exposure Limits
Alcohols, C12-16, ethoxylated	**ACGIH-TLV** Not established **OSHA-PEL** Not established
Benzenesulfonic acid, C10-16-alkyl derivatives	**ACGIH-TLV** Not established **OSHA-PEL** Not established
C10-16 alkyl ethers, sodium salts	**ACGIH-TLV** Not established **OSHA-PEL** Not established
Fatty acids, C8-18 and C18-unsaturated	**ACGIH-TLV** Not established **OSHA-PEL** Not established

Engineering controls General ventilation normally adequate.

Personal protective equipment

Eye / face protection When handling in large quantities or responding to emergency situations, the use of appropriate eye protection is recommended.
Emergency responders should wear full eye and face protection.

Hand protection For sensitive skin or prolonged use, wear rubber gloves.
Emergency responders should wear impermeable gloves.

Skin and body protection As required by employer code.
Emergency responders should wear impermeable clothing and footwear when responding to a situation where contact with the liquid is possible.

Respiratory protection Where exposure guideline levels may be exceeded, use an approved NIOSH respirator. Emergency responders should wear self-contained breathing apparatus (SCBA) to avoid inhalation of vapours generated by this product during a spill or other clean-up operations.

General hygiene considerations Handle in accordance with good industrial hygiene and safety practice. When using do not eat or drink. Wash hands before breaks and immediately after handling the product.

9. Physical and Chemical Properties

Appearance	Liquid.
Color	Variable
Form	Liquid
Odor	Perfume
Odor threshold	Not available
Physical state	Liquid
pH	7.5 - 8.5
Freezing point	Not available
Pour point	Not available
Boiling point	Not available
Flash point	> 199.94 °F (> 93.3 °C)
Evaporation rate	Not available
Flammability limits in air, lower, % by volume	Not available

Flammability limits in air, upper, % by volume	Not available
Vapor pressure	Not available
Vapor density	Not available
Specific gravity	1.020 - 1.040
Octanol/water coefficient	Not available
Solubility (H2O)	High
Auto-ignition temperature	Not available

10. Stability and Reactivity

Chemical stability	Stable under recommended storage conditions.
Conditions to avoid	Do not mix with other chemicals.
Incompatible materials	Acids.
Hazardous decomposition products	May include and are not limited to: Oxides of carbon.
Possibility of hazardous reactions	Hazardous polymerization does not occur.

11. Toxicological Information

Component analysis - LC50

Ingredient(s)	LC50
Alcohols, C12-16, ethoxylated	Not available
Benzenesulfonic acid, C10-16-alkyl derivatives	Not available
C10-16 alkyl ethers, sodium salts	Not available
Fatty acids, C8-18 and C18-unsaturated	Not available

Component analysis - Oral LD50

Ingredient(s)	LD50
Alcohols, C12-16, ethoxylated	1380 mg/kg rat
Benzenesulfonic acid, C10-16-alkyl derivatives	530 mg/kg rat
C10-16 alkyl ethers, sodium salts	1700 mg/kg rat
Fatty acids, C8-18 and C18-unsaturated	Not available

Effects of acute exposure

Eye	Irritating to eyes.
Skin	Non-irritating to the skin. Not expected to be a skin sensitizer.
Inhalation	May cause respiratory tract irritation.
Ingestion	May be harmful if swallowed.
Sensitization	The finished product is not expected to have chronic health effects.
Chronic effects	The finished product is not expected to have chronic health effects.
Carcinogenicity	The finished product is not expected to have chronic health effects.
Mutagenicity	The finished product is not expected to have chronic health effects.
Reproductive effects	The finished product is not expected to have chronic health effects.
Teratogenicity	The finished product is not expected to have chronic health effects.
Synergistic Materials	Not available

12. Ecological Information

Ecotoxicity Components of this product have been identified as having potential environmental concerns.

Ecotoxicity - Freshwater Fish Species Data

Benzenesulfonic acid, C10-16-alkyl derivatives **Ecotoxicity - Water Flea Data**	68584-22-5	96 Hr LC50 Oncorhynchus mykiss: 3 mg/L [static]
Benzenesulfonic acid, C10-16-alkyl derivatives	68584-22-5	48 Hr EC50 Daphnia magna: 2.9 mg/L

Environmental effects	Not available
Aquatic toxicity	Not available
Persistence / degradability	Not available
Bioaccumulation / accumulation	Not available
Partition coefficient	Not available
Mobility in environmental media	Not available
Chemical fate information	Not available

13. Disposal Considerations

Waste codes	Not available
Disposal instructions	Dispose in accordance with all applicable regulations.
Waste from residues / unused products	Not available
Contaminated packaging	Not available

14. Transport Information

UN/ID N.o. Not applicable

U.S. Department of Transportation (DOT): Classification: Not regulated

Proper shipping name	Not applicable
U.S. DOT Hazard Class	Not applicable
Subsidiary Risk	Not applicable
Packing group	Not applicable
DOT RQ (lbs)	Not applicable
ERG NO	Not applicable

Transportation of Dangerous Goods (TDG - Canada): Classification: Not regulated

Proper shipping name	Not applicable
Status	Not applicable
Packing group	Not applicable

IMDG (Marine Transport): Classification: Not regulated

Proper shipping name	Not applicable
Class	Not applicable
Subsidiary Risk	Not applicable
Packing group	Not applicable
IMDG Page	Not applicable
Marine pollutant	Not applicable
EMS	Not applicable
MFAG	Not applicable
Maximum Quantity	Not applicable

IATA/ICAO (Air): Classification: Not regulated

Proper shipping name	Not applicable
Class	Not applicable
Subsidiary Risk:	Not applicable
Packing group	Not applicable
Maximum Quantity	Not applicable

15. Regulatory Information

US Federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Product Registration: Not registered

Occupational Safety and Health Administration (OSHA)

29 CFR 1910.1200 hazardous chemical	Yes

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories	Immediate Hazard - Yes Delayed Hazard - No Fire Hazard - No Pressure Hazard - No Reactivity Hazard - No
Section 302 extremely hazardous substance	No
Section 311 hazardous chemical	Yes
Clean Air Act (CAA)	Not available
Clean Water Act (CWA)	Not available
State regulations	This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

16. Other Information

Disclaimer	This product should only be used as directed on the label and for the purpose intended. To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.
Further information	62338-06130 - 16 oz. - Extra Delicate Care - 0257757
Issue date	06-Apr-2010
Effective date	01-Apr-2010
Prepared by	Reckitt Benckiser Regulatory Department 800-333-3899
Other information	For an updated MSDS, please contact the supplier/manufacturer listed on the first page of the document.

Appendix C

Data Validation Report

Phoenix Chemistry Services

May 16, 2011

Nadine Weinberg
ARCADIS, U.S., Inc.
482 Congress Street, Suite 501
Portland, ME 04101

Reference #: 2011-0510-001

Dear Nadine,

Enclosed please find the results of the data validation of Sample Delivery Group No. L1105581 from the Indoor Air Quality/Vapor Intrusion (IAQ/VI) assessment work at a residential property in Woburn, MA. The indoor and outdoor air and sub-slab vapor samples in SDG No. L1105581 were collected on April 21 - 22, 2011. The laboratory analyses were performed by Alpha Analytical Laboratories, Inc. of Mansfield, MA.

The data package and an electronic deliverable were received on May 10, 2011, and a separate data package for the canister certifications (SDG No. L1105086), and two supplemental files L1105581A.pdf and L1105581B.pdf, were also received on May 10, 2011. The validation has been performed by Phoenix Chemistry Services according to the Tier III guidelines as defined by USEPA Region I, as presented in "Region I EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses", December, 1996. The EPA's National Functional Guidelines for Organic Data Review (EPA 540/R-99/008, October, 1999), the IAQ/VI Quality Assurance Project Plan (QAPP), and the Field-Laboratory Coordination Memorandum (Phoenix Chemistry Services, March 25, 2010) were also considered during the evaluation, and professional judgment was applied as necessary and appropriate. Data qualifiers have been applied in the final validation report as necessary and appropriate, in accordance with these guidelines.

Thank you for this opportunity to provide data validation services to ARCADIS. We look forward to continuing to work with you on this and other projects. If there are any questions or concerns about the material in this report, please do not hesitate to contact me for help and clarification.

Sincerely,

Deborah H. Gaynor, Ph.D.
Principal, Phoenix Chemistry Services

DATA VALIDATION

FOR

UniFirst-Woburn Vapor Intrusion Assessment
Woburn, MA

ORGANIC ANALYSIS DATA
Selected Volatiles in Air Samples

Sample Delivery Group (SDG) No.
L1105581

Chemical Analyses Performed by:

Alpha Analytical Laboratories, Inc.
320 Forbes Blvd.
Mansfield, MA 02048

FOR

ARCADIS U.S., Inc.
482 Congress Street, Suite 501
Portland, ME 04101

Data Validation Report by:

Phoenix Chemistry Services
126 Covered Bridge Rd.
N. Ferrisburg, VT 05473
(802) 233-2473
May 19, 2011

Reference #2011-0510-001
VOA Air Validation Report/L1105581_5O/dhg

EXECUTIVE SUMMARY

Phoenix Chemistry Services (Phoenix) has completed the validation of the Method TO-15 Selected Ion Monitoring (SIM) volatiles in air analysis data prepared by Alpha Analytical Laboratories of Mansfield, MA, for 7 air samples and one (1) trip blank (TB) from a residential property in Woburn, MA. The laboratory reported the data under Sample Delivery Group (SDG) No. L1105581, which was submitted as a single data package received by Phoenix on May 10, 2011, and includes the following samples:

Sample Location	Sample ID	Laboratory ID
AA-57O-1	OA-01	L1105581-01
IA-5O-4	IA-04	L1105581-05
IA-5O-5	IA-05	L1105581-06
IA-5O-5	DUPIA042111	L1105581-07
Field QC	TRIP BLANK	L1105581-08
SS-5O-4	SS-4	L1105581-11
SS-5O-5	SS-5	L1105581-12
SS-5O-4	DUPSS42211	L1105581-13

A cross-reference table of sample IDs was provided in the data package. The Sample Location name is being presented in this sample list to aid in identifying project samples with non-unique Sample IDs. The location name will be given as needed in this report to maintain clarity. A separate data package, L1105086, containing the supporting documentation (clean can certifications) for the preparation and analysis of the sampling canisters, and two files (L110581A.pdf and L110581B.pdf), containing the raw data for the vacuum check upon receipt and the flow controller rate checks, were also submitted on May 10, 2011.

The samples in this data set represent the indoor air and the sub-slab soil vapor samples (matched to the indoor sampling locations) collected from April 21 to 22, 2011 in Woburn, MA inside a residential building, and an ambient air sample collected outdoors at the sample location. All samples were kept in the engineer's custody after sampling until hand-delivered by laboratory courier to the laboratory on April 25, 2011.

Findings of the validation effort resulted in the following qualifications of sample results:

- Results for methyl tert-butyl ether (MTBE) and trans-1,3-dichloropropene in all samples were qualified as estimated (UJ).

- Positive results for naphthalene greater than the sample-specific (adjusted) QL but less than the action limit in samples IA-04 (location IA-5O-04) and DUPIA042111 (IA-5O-5) were qualified as less than the reported value (U).

- The laboratory appropriately applied "J" qualifiers to the CLP-like sample Form 1s when the concentration of an analyte was less than the sample-specific QL for the analytes naphthalene, 1,2-dibromoethane, and bromodichloromethane in the TO-15 SIM analysis. The validator did not remove these qualifiers.

The Overall Evaluation of Data (Section XVI) summarizes the validation results. The validation findings and conclusions for each analytical parameter are detailed in the remaining sections of this report.

Documentation problems observed in the data package are described in Section XVII.

This validation report shall be considered part of the data package for all future distributions of TO - 15 SIM (volatiles in air) analysis data for SDG No. L1105581.

INTRODUCTION

Analyses of selected volatiles in air samples were performed according to Method TO-15, as modified for Selected Ion Monitoring (SIM) in the laboratory standard operating procedure (SOP) No. A-001, and in accordance with requirements in the Quality Assurance Project Plan (QAPP) for Indoor Air Quality and Vapor Intrusion Assessment, Rev. 2, March, 2010. The target compound list was limited to the compounds listed in Form K of the QAPP, and reporting limits are as specified there.

Tentative identification of non-target analyte peaks (i.e., tentatively identified compounds, or TICs) was not requested for these analyses.

Phoenix's validation was performed in conformance with Tier III guidelines as defined by USEPA Region I. Data qualifiers are applied as necessary and appropriate. To the extent possible, the data were evaluated in accordance with the "Region I EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses", December, 1996. EPA's National Functional Guidelines for Organic Data Review (EPA 540/R-94/012, 2/94) and the QAPP were also considered during the evaluation, and professional judgment was applied as necessary and appropriate.

The data validation process evaluates data on a technical basis for chemical analyses conducted under the USEPA Contract Laboratory Program (CLP) or other well-defined methods. Contract compliance is evaluated only in specific situations. Issues pertaining to contractual compliance are noted where applicable. It is assumed that the data package is presented in accordance with the CLP requirements. It is also assumed that the data package represents the best efforts of the laboratory and has already been subjected to adequate and sufficient quality review prior to submission for validation.

Results of sample analyses are reported by the laboratory as either qualified or unqualified; various qualifier codes are used by the laboratory to denote specific information regarding the analytical results. During the validation process, laboratory data are verified against all available supporting documentation. Based on this evaluation, qualifier codes may be added, deleted or modified by the data validator. Raw data is examined in detail to check calculations, compound identification, and/or transcription errors. Validated results are either qualified or unqualified; if results are unqualified, this means that the reported values may be used without reservation. Final validated results are annotated with the following codes, as defined in the EPA Region I Functional Guidelines:

U - The analyte was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit. The sample quantitation limit accounts for sample specific dilution factors and percent solids corrections or sample sizes that deviate from those required by the method.

J - The associated numerical value is an estimated quantity.

UJ - The analyte was analyzed for, but was not detected. The sample quantitation limit is an estimated quantity.

R - The data are unusable (analyte may or may not be present). Resampling and reanalysis is necessary for verification. The R replaces the numerical value or sample quantitation limit.

In some instances (e.g., a dilution) a result may be indicated as "rejected" to avoid confusion when a more quantitatively accurate result is available.

EB, TB, BB - An analyte that was identified in an aqueous equipment (field) blank, trip blank, or bottle blank that was used to assess field contamination associated with soil/sediment samples. These qualifiers are to be applied to soil/sediment sample results only.

These codes are assigned during the validation process and are based on the data review of the results. They are recorded in the "Validator_Qualifier" column, and are also found with the validated laboratory-applied qualifiers in the "Qualifier" column in the electronic spreadsheet contained in Attachment A.

All data users should note two facts. First, **the "R" qualifier means that the laboratory-reported value is completely unusable.** The analysis is invalid due to significant quality control problems, and provides no information as to whether the compound is present or not. Rejected values should not appear on data tables because they have no useful purpose under any circumstances. Second, **no analyte concentration is guaranteed to be accurate even if all associated quality control is acceptable.** While strict quality control conformance provides well-defined confidence in the reported results, any analytical result will always contain some error.

The user is also cautioned that the validation effort is based on the materials provided by the laboratory. Software manipulation, resulting in misleading raw data printouts, cannot be routinely detected during validation; unless otherwise stated in the report, these kinds of issues are outside the scope of this review.

Detailed Findings of Measurement Error Associated with the Analytical Analysis

I. Sample Integrity

The outdoor and indoor air samples for volatiles analysis were collected over an approximately 24-hour period from April 21 to 22, 2011, and the matching sub-slab (soil vapor) samples were collected at mid-day on April 22, 2011 for an approximately 30-minute period. The property is located in Woburn, MA. All analyses were performed within ten (10) days after sample collection, which is within the 30 day holding time defined in Method TO-15.

The canisters were delivered by laboratory courier to the field sampler's possession prior to the sample collection period; however, the custody transfer was not recorded on the Chain of Custody documents as required in the Field-Laboratory Coordination Memorandum (Phoenix Chemistry Services, March 25, 2010). The canisters were hand-delivered by laboratory courier to the laboratory three days after collection ended; the canisters were kept in the field engineer's office during the intervening days. A separate data package, L1105086, was also submitted on May 10, 2011, containing the supporting documentation (clean can certification) for the preparation and analysis of the sampling canisters, along with the raw data for the vacuum and flow controller checks, respectively, in files L1105581A.pdf and L110581B.pdf, also submitted on May 10, 2011.

The Chain of Custody (COC) and the Canister and Flow Controller Information records show that the sample canisters were collected and transported according to method specifications.

All canisters submitted to the field for use met all applicable method requirements. Based on acceptable sampling equipment conditions at receipt, sample integrity was deemed acceptable for all samples.

Field log books containing records of height of canister intake, barometric pressure, and ambient temperature at sampling locations were not submitted for review as part of this validation effort.

II. GC/MS Instrument Performance Check (Tuning)

The samples for volatiles in air analyses from SDG No. L1105581 were analyzed on a single GC/MS system identified as instrument Airpiano2. The tuning of this instrument was demonstrated with analysis of 4-bromofluorobenzene (BFB); tunes were analyzed for each 24-hour period during which the samples or associated standards were analyzed. Both BFB tunes were correctly calculated, within acceptance limits, and are reported accurately on the Form 5 summaries in the data package.

III. Initial Calibration (IC)

One IC (4/6/11, 01:07 – 07:25) was performed on instrument Airpiano2 in support of the TO-15 SIM sample analyses. The IC was performed at ten concentration levels (0.02, 0.04, 0.1, 0.2, 0.5, 1.0, 2.5, 5.0, 10, and 50 part per billion by volume [ppbv]), except that the 0.02 ppbv standard was not used for calibration of naphthalene. Documentation of all individual IC standards was present in the data package and relative

response factor (RRF) as well as percent relative standard deviation (%RSD) values were correctly calculated and accurately reported on the Form 6 summary.

Manual integrations for some target analytes, internal standards, or surrogate standards were performed in some standards and samples in this data set. The before and after ion chromatograms, the reason for the manual integration, and the analyst's initials and date were printed for each manual integration.

All average RRF values were above the 0.05 minimum criterion, and all %RSDs were below the maximum limit (30%) specified by Region I.

An Independent Calibration Verification (ICV) sample analysis at 5 ppbv was analyzed after the IC. All spiked analytes were recovered within 70 – 130 % recovery of expected values in the ICV analysis.

Since the reporting limit for naphthalene is set above the lowest standard used in the calibration, no actions are necessary on the basis of the modification of the initial calibration range for this compound.

IV. Continuing Calibration (CC)

One continuing calibration (CC) standard was run in support of the TO-15 SIM sample analyses reported in this data package. Documentation of the CC standard was present and RRF as well as percent difference (%D) values were reported on the Form 7 summary within the data package. Sample results were properly reported using the average RRF of the calibration curve for quantitation. All RRF values were above the 0.05 minimum criterion, and al %D values were below the maximum limit (25%) specified by Region 1, with the following exceptions:

Table 1. Continuing Calibration (CC) Standard Exceedances

Method	CC Date & Time	Analyte	%D	Associated Samples
TO-15 SIM	4/30/10 16:24	methyl tert-butyl ether (MTBE)	+25.7	all samples
		trans-1,3-dichloropropene	+28.7	

It should be noted that a positive % D value (the CC response factor is less than the IC response factor) will result in a low bias for positive detects, and a negative % D will result in a high bias for positive detects.

On the basis of the unacceptably high %D value in the associated CC standard, results for methyl tert-butyl ether (MTBE) and trans-1,3-dichloropropene in all samples were qualified as estimated (UJ).

V. Blanks

Results for one air-matrix laboratory method blank (MB) were reported in association with the TO-15 SIM sample analyses. No target compounds were found in the MB, with the exception that 0.131 ug/m^3 naphthalene (action limit 0.262 ug/m^3) was detected in the MB identified as WG465568-4BLANK.

One trip blank (TB), which was used as a field blank, was reported in this data package. No target compounds were found in the TB.

Neither a trip blank nor a field blank is required for Method TO-15.

On the basis of laboratory contamination, positive results for naphthalene greater than the sample-specific (adjusted) QL but less than the action limit (at twice the detected concentration) in samples IA-04 (location IA-5O-4) and DUPIA042111 (IA-5O-5) were qualified as less than the reported value (U).

VI. Surrogate Compounds

No surrogate compounds are used in these methods.

VII. Internal Standards (IS)

All IS areas and retention times (RT) were within the established QC limits for all reported sample analyses in this data package.

VIII. Laboratory Duplicates

A matrix spike/matrix spike duplicate (MS/MSD) analysis is not used in this method. A laboratory duplicate analysis of a field sample (matrix duplicate) analysis is also not required but was performed per laboratory protocols. Sample SS-4 at location SS-5O-4 was reported for laboratory duplicate analysis (L1105581-13). Relative percent difference (RPD) values were reported on a Form 3 summary within the data package.

Precision in the laboratory duplicate analyses (6.0 %RPD) was acceptable (less than 30 % RPD, for all analytes greater than five times the reporting limit) on the basis of professional judgment.

IX. Field Duplicates

Two field duplicates were collected in this sample set. Sample DUPIA042111 was identified as the field duplicate of sample IA-05 (location IA-5O-5), and sample DUPSS42211 was identified as the field duplicate of sample SS-4 (SS-5O-4).

Relative percent difference (RPD) values for compounds detected at greater than five times the quantitation limit in at least one member of a field duplicate pair must be less than 25 %RPD as per the QAPP. The paired values in both field duplicate pairs for all detected target compounds meeting threshold criteria were acceptable (range 0.0 - 10.1 %RPD).

X. Sensitivity Check

An MDL study for the TO-15 SIM method was analyzed by the laboratory on May 7, 2009, and the most recent verification study was performed between on February 3 and 4, 2010. All target analytes in the statistical study had calculated MDLs below the method quantitation limits (QLs), and demonstrated acceptable ratios (at least 3:1) of the QL to the MDL. The QLs are also supported by the low concentration standard (at 0.020 ppbv) in the initial calibration.

Project objectives required a low reporting limit (RL) for naphthalene, and in order to achieve project objectives for detection limits, the analytes 1,2-dibromoethane (EDB), bromodichloromethane, and naphthalene were evaluated by the laboratory down to one-half the RL; concentrations between one-half the RL and the RL were reported with a "J" qualifier to indicate that this was an estimated concentration on the Form 1 summaries; results below the QL were only detected for naphthalene in this sample set.

On the basis of acceptable sensitivity and accuracy, as demonstrated by the MDL study and supported by the initial calibration, all results for the TO-15 SIM method (detects and non-detects) not qualified for other reasons are deemed acceptable as reported.

XI. Performance Evaluation Samples (PES)/Accuracy Check

One zero blind PE samples (commonly known as a laboratory control sample, LCS) was prepared and analyzed by the laboratory in support of the TO-15 SIM sample analyses. All target analytes were spiked into the QC samples at 5 ppbv. Percent recoveries (%R) were correctly calculated for the spiked compounds, accurately reported on the Form 3 summaries in the data package, and were within the laboratory established QC limits (70 - 130 %R) for all target analytes. No spiked duplicate analyses were performed for either method, so laboratory precision was not evaluated using spiked analyses.

No external single-blind PES sample for either method was required or submitted with the samples in this data set.

XII. Target Compound Identification

Reported target compounds were correctly identified for all samples in this data set.

XIII. Compound Quantitation and Reported Quantitation Limits

Target compound quantitation and practical quantitation limits (PQLs) were accurately reported on the Form 1 summaries. Results below the RL are not reported by the laboratory for this method. However, at the client's request, positive results for naphthalene, bromodichloromethane, and 1,2-dibromoethane (EDB) were evaluated down to one-half the RL, and reported with a "J" qualifier by the laboratory on the Form 1s.

One compound was reported with reporting limits slightly higher than specified in the QAPP. Total xylenes were reported with a quantitation limit of 0.260 ug/m^3. No qualifications were deemed necessary on the basis of the RL slightly above that specified in the QAPP for total xylenes, since this concentration is still

well below the risk screening level.

The laboratory appropriately applied "J" qualifiers to the CLP-like sample Form 1s when the concentration of an analyte was less than the sample-specific QL for the analytes naphthalene, 1,2-dibromoethane, and bromodichloromethane in the TO-15 SIM analysis. The validator did not remove these qualifiers (results below the QL were only detected for naphthalene in this sample set).

The values that the validator has judged to be acceptable are presented on the electronic deliverable generated from the project database (Attachment A). Qualifiers applied by the validator during the validation effort have been listed on the electronic spreadsheet in an additional column labeled "Validator_Qualifier". The column labeled "Qualifier" contains both qualifiers applied by the laboratory and those applied by the validator; all qualifiers in this column have been accepted or changed during the validation effort. The column labeled "PreValidationFlag", which is generated by the database utility, also indicates which qualifiers were changed by the validator. Sample-specific quantitation limits may be found on the Form 1 for each sample or in the electronic deliverable (Attachment A, column "ReportingLimit").

The Form 1s submitted in the data package present results in units of ug/m^3 as well as in ppbv. Results are also presented almost entirely in units of ug/m^3 in the electronic data deliverable (EDD). Both the forms and the EDD were examined during the data validation process.

All positive results are listed on the electronic data deliverable, whether or not the value or qualifier was changed as a result of the validation. All non-detected results are listed on the electronic data deliverable with a Qualifier of "U" or "UJ"; these are also found as less-than (<) values in the "TextResult" column. If the reported result value was changed during the validation effort from a positive result to a value representing a concentration not detected at or below, the value representing the new reporting limit is reported as the Result with a Validator Qualifier of "U" or "UJ" and a "<" sign in the "TextResult" column.

XIV. Tentatively Identified Compounds (TICs)

Evaluation of unidentified, non-target analyte peaks was not requested or performed for these samples.

XV. System Performance

The analytical system appears to have been working acceptably, based on instrument printouts and spectral quality.

XVI. Overall Evaluation of Data

Findings of the validation effort resulted in the following qualifications:

- On the basis of the unacceptably high %D value in the associated CC standard, results for methyl tert-butyl ether (MTBE) and trans-1,3-dichloropropene in all samples were qualified as estimated (UJ).

- On the basis of laboratory contamination, positive results for naphthalene greater than the sample-specific (adjusted) QL but less than the action limit in samples IA-04 (IA-5O-04) and DUPIA042111 (IA-5O-5) were qualified as less than the reported value (U).

- The laboratory appropriately applied "J" qualifiers to the CLP-like sample Form 1s when the concentration of an analyte was less than the sample-specific QL for the analytes naphthalene, 1,2-dibromoethane, and bromodichloromethane in the TO-15 SIM analysis. The validator did not remove these qualifiers.

XVII. Documentation

The required records for canister cleanliness were submitted as a separate data package, SDG No. L1102539, and all required records were properly included with this data package. Canister cleanliness and auxiliary equipment status was acceptable upon release from the laboratory, and appropriate checks and actions were performed as required upon sample and equipment receipt.

The chain of custody (COC) records were present and accurately completed for all reported samples.

Data presentation was acceptable, with the following observations:

- The canisters were delivered by laboratory courier to the field sampler's possession; however, the custody transfer was not recorded on the Chain of Custody documents as required in the Field-Laboratory Coordination Memorandum (Phoenix Chemistry Services, March 25, 2010). For future sampling efforts, it is recommended that the laboratory COC record be initiated at the time of release of the canisters from the laboratory.

- One compound was reported with reporting limits slightly higher than specified in the QAPP. Total xylenes were reported with a quantitation limit of 0.260 ug/m^3.

This validation report should be considered part of the data package for all future distributions of the TO-15 SIM (volatiles in air) analysis data for SDG No. L1105581.

ATTACHMENT A

ELECTRONIC DELIVERABLE (EDD)
SDG No. L1105581_5O
Selected Volatiles in Air Samples
(submitted electronically)

ARCADIS

Appendix D

Laboratory Analytical Data Package

ALPHA ANALYTICAL

ANALYTICAL REPORT

Lab Number:	L1105581
Client:	Arcadis 482 Congress Street Suite 501 Portland, ME 04101
ATTN:	Nadine Weinberg
Phone:	(207) 828-0046
Project Name:	UNIFIRST WELLS G&H
Project Number:	MA000989.0002.0003
Report Date:	05/06/11

Certifications & Approvals: MA (M-MA030), NY (11627), CT (PH-0141), NH (2206), NJ (MA015), RI (LAO00299), ME (MA0030), PA (Registration #68-02089), LA NELAC (03090), FL NELAC (E87814), US Army Corps of Engineers.

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: UNIFIRST WELLS G&H
Project Number: MA000989.0002.0003

Lab Number: L1105581
Report Date: 05/06/11

Alpha Sample ID	Client ID	Sample Location	Collection Date/Time
L1105581-01	OA-01	WOBURN, MA	04/22/11 08:49
L1105581-05	IA-04	WOBURN, MA	04/22/11 10:16
L1105581-06	IA-05	WOBURN, MA	04/22/11 10:18
L1105581-07	DUPIA042111	WOBURN, MA	04/21/11 00:00
L1105581-08	TRIP BLANK	WOBURN, MA	04/21/11 00:00
L1105581-11	SS-4	WOBURN, MA	04/22/11 13:10
L1105581-12	SS-5	WOBURN, MA	04/22/11 12:52
L1105581-13	DUPSS42211	WOBURN, MA	04/22/11 00:00

Project Name:	UNIFIRST WELLS G&H	**Lab Number:**	L1105581
Project Number:	MA000989.0002.0003	**Report Date:**	05/06/11

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet all of the requirements of NELAC, for all NELAC accredited parameters. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

For additional information, please contact Client Services at 800-624-9220.

Volatile Organics in Air (SIM)

The canister certification results are provided as an addendum.

Volatile Organics in Air (SIM)

1,2-Dibromoethane, Bromodichloromethane and Naphthalene were evaluated to 1/2 the RL and are J qualified if the concentration is below the quantitation limit (RDL), but greater than or equal to 1/2 the RDL. Values are estimated.

Method blank, WG465568-4, has Naphthalene which is J qualified.

Project Name:	UNIFIRST WELLS G&H	**Lab Number:**	L1105581
Project Number:	MA000989.0002.0003	**Report Date:**	05/06/11

Case Narrative (continued)

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Kathleen M. O'Brien Kathleen O'Brien

Title: Technical Director/Representative Date: 05/06/11

AIR

Project Name: UNIFIRST WELLS G&H
Project Number: MA000989.0002.0003
Lab Number: L1105581
Report Date: 05/06/11

SAMPLE RESULTS

Lab ID: L1105581-01
Client ID: OA-01
Sample Location: WOBURN, MA
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 04/30/11 19:33
Analyst: RY

Date Collected: 04/22/11 08:49
Date Received: 04/22/11
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
1,1,1-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1,2-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1-Dichloroethane	ND	0.020	0.020	ND	0.081	0.081		1
1,1-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
1,2,4-Trimethylbenzene	ND	0.020	0.020	ND	0.098	0.098		1
1,2-Dibromoethane	ND	0.020	0.010	ND	0.154	0.077		1
1,2-Dichloroethane	ND	0.020	0.020	ND	0.081	0.081		1
1,2-Dichloropropane	ND	0.020	0.020	ND	0.092	0.092		1
1,3-Butadiene	ND	0.020	0.020	ND	0.044	0.044		1
1,3-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
1,4-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
Benzene	0.102	0.070	0.070	0.326	0.223	0.223		1
Bromodichloromethane	ND	0.020	0.010	ND	0.134	0.067		1
Bromoform	ND	0.020	0.020	ND	0.206	0.206		1
Carbon tetrachloride	0.056	0.020	0.020	0.352	0.126	0.126		1
Chlorobenzene	ND	0.020	0.020	ND	0.092	0.092		1
Chloroform	ND	0.020	0.020	ND	0.098	0.098		1
cis-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
Ethylbenzene	0.020	0.020	0.020	0.087	0.087	0.087		1
Methylene chloride	ND	0.500	0.500	ND	1.74	1.74		1
Methyl tert butyl ether	ND	0.020	0.020	ND	0.072	0.072		1
Naphthalene	ND	0.050	0.025	ND	0.262	0.131		1
XYLENE (TOTAL)	ND	0.060	0.060	ND	0.260	0.260		1
Tetrachloroethene	ND	0.020	0.020	ND	0.136	0.136		1
Toluene	0.149	0.050	0.050	0.561	0.188	0.188		1

Project Name: UNIFIRST WELLS G&H
Project Number: MA000989.0002.0003
Lab Number: L1105581
Report Date: 05/06/11

SAMPLE RESULTS

Lab ID: L1105581-01
Client ID: OA-01
Sample Location: WOBURN, MA
Date Collected: 04/22/11 08:49
Date Received: 04/22/11
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
trans-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
trans-1,3-Dichloropropene	ND	0.020	0.020	ND	0.091	0.091		1
Trichloroethene	ND	0.020	0.020	ND	0.107	0.107		1
Vinyl chloride	ND	0.020	0.020	ND	0.051	0.051		1
Isopropylbenzene	ND	0.500	0.500	ND	2.46	2.46		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	89		60-140
bromochloromethane	94		60-140
chlorobenzene-d5	92		60-140

Project Name: UNIFIRST WELLS G&H
Project Number: MA000989.0002.0003
Lab Number: L1105581
Report Date: 05/06/11

SAMPLE RESULTS

Lab ID: L1105581-05
Client ID: IA-04
Sample Location: WOBURN, MA
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 04/30/11 22:04
Analyst: RY

Date Collected: 04/22/11 10:16
Date Received: 04/22/11
Field Prep: Not Specified

	ppbV			ug/m3				Dilution
Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier	Factor
Volatile Organics in Air by SIM - Mansfield Lab								
1,1,1-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1,2-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1-Dichloroethane	ND	0.020	0.020	ND	0.081	0.081		1
1,1-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
1,2,4-Trimethylbenzene	0.041	0.020	0.020	0.201	0.098	0.098		1
1,2-Dibromoethane	ND	0.020	0.010	ND	0.154	0.077		1
1,2-Dichloroethane	0.031	0.020	0.020	0.125	0.081	0.081		1
1,2-Dichloropropane	ND	0.020	0.020	ND	0.092	0.092		1
1,3-Butadiene	0.067	0.020	0.020	0.148	0.044	0.044		1
1,3-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
1,4-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
Benzene	0.152	0.070	0.070	0.485	0.223	0.223		1
Bromodichloromethane	ND	0.020	0.010	ND	0.134	0.067		1
Bromoform	ND	0.020	0.020	ND	0.206	0.206		1
Carbon tetrachloride	0.057	0.020	0.020	0.358	0.126	0.126		1
Chlorobenzene	ND	0.020	0.020	ND	0.092	0.092		1
Chloroform	0.242	0.020	0.020	1.18	0.098	0.098		1
cis-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
Ethylbenzene	0.073	0.020	0.020	0.317	0.087	0.087		1
Methylene chloride	ND	0.500	0.500	ND	1.74	1.74		1
Methyl tert butyl ether	ND	0.020	0.020	ND	0.072	0.072		1
Naphthalene	0.035	0.050	0.025	0.183	0.262	0.131	J	1
XYLENE (TOTAL)	0.161	0.060	0.060	0.698	0.260	0.260		1
Tetrachloroethene	0.281	0.020	0.020	1.90	0.136	0.136		1
Toluene	0.822	0.050	0.050	3.10	0.188	0.188		1

Project Name: UNIFIRST WELLS G&H
Project Number: MA000989.0002.0003
Lab Number: L1105581
Report Date: 05/06/11

SAMPLE RESULTS

Lab ID: L1105581-05
Client ID: IA-04
Sample Location: WOBURN, MA
Date Collected: 04/22/11 10:16
Date Received: 04/22/11
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
trans-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
trans-1,3-Dichloropropene	ND	0.020	0.020	ND	0.091	0.091		1
Trichloroethene	ND	0.020	0.020	ND	0.107	0.107		1
Vinyl chloride	ND	0.020	0.020	ND	0.051	0.051		1
Isopropylbenzene	ND	0.500	0.500	ND	2.46	2.46		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	83		60-140
bromochloromethane	81		60-140
chlorobenzene-d5	89		60-140

Project Name: UNIFIRST WELLS G&H
Project Number: MA000989.0002.0003
Lab Number: L1105581
Report Date: 05/06/11

SAMPLE RESULTS

Lab ID: L1105581-06
Client ID: IA-05
Sample Location: WOBURN, MA
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 04/30/11 22:40
Analyst: RY

Date Collected: 04/22/11 10:18
Date Received: 04/22/11
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
1,1,1-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1,2-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1-Dichloroethane	ND	0.020	0.020	ND	0.081	0.081		1
1,1-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
1,2,4-Trimethylbenzene	0.034	0.020	0.020	0.167	0.098	0.098		1
1,2-Dibromoethane	ND	0.020	0.010	ND	0.154	0.077		1
1,2-Dichloroethane	0.028	0.020	0.020	0.113	0.081	0.081		1
1,2-Dichloropropane	ND	0.020	0.020	ND	0.092	0.092		1
1,3-Butadiene	0.052	0.020	0.020	0.115	0.044	0.044		1
1,3-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
1,4-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
Benzene	0.144	0.070	0.070	0.460	0.223	0.223		1
Bromodichloromethane	ND	0.020	0.010	ND	0.134	0.067		1
Bromoform	ND	0.020	0.020	ND	0.206	0.206		1
Carbon tetrachloride	0.054	0.020	0.020	0.339	0.126	0.126		1
Chlorobenzene	ND	0.020	0.020	ND	0.092	0.092		1
Chloroform	0.129	0.020	0.020	0.629	0.098	0.098		1
cis-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
Ethylbenzene	0.068	0.020	0.020	0.295	0.087	0.087		1
Methylene chloride	ND	0.500	0.500	ND	1.74	1.74		1
Methyl tert butyl ether	ND	0.020	0.020	ND	0.072	0.072		1
Naphthalene	ND	0.050	0.025	ND	0.262	0.131		1
XYLENE (TOTAL)	0.157	0.060	0.060	0.681	0.260	0.260		1
Tetrachloroethene	0.290	0.020	0.020	1.96	0.136	0.136		1
Toluene	0.787	0.050	0.050	2.96	0.188	0.188		1

Project Name: UNIFIRST WELLS G&H
Project Number: MA000989.0002.0003
Lab Number: L1105581
Report Date: 05/06/11

SAMPLE RESULTS

Lab ID: L1105581-06
Client ID: IA-05
Sample Location: WOBURN, MA
Date Collected: 04/22/11 10:18
Date Received: 04/22/11
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
trans-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
trans-1,3-Dichloropropene	ND	0.020	0.020	ND	0.091	0.091		1
Trichloroethene	ND	0.020	0.020	ND	0.107	0.107		1
Vinyl chloride	ND	0.020	0.020	ND	0.051	0.051		1
Isopropylbenzene	ND	0.500	0.500	ND	2.46	2.46		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	88		60-140
bromochloromethane	94		60-140
chlorobenzene-d5	93		60-140

Project Name: UNIFIRST WELLS G&H
Project Number: MA000989.0002.0003
Lab Number: L1105581
Report Date: 05/06/11

SAMPLE RESULTS

Lab ID: L1105581-07
Client ID: DUPIA042111
Sample Location: WOBURN, MA
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 04/30/11 23:17
Analyst: RY

Date Collected: 04/21/11 00:00
Date Received: 04/22/11
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
1,1,1-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1,2-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1-Dichloroethane	ND	0.020	0.020	ND	0.081	0.081		1
1,1-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
1,2,4-Trimethylbenzene	0.032	0.020	0.020	0.157	0.098	0.098		1
1,2-Dibromoethane	ND	0.020	0.010	ND	0.154	0.077		1
1,2-Dichloroethane	0.031	0.020	0.020	0.125	0.081	0.081		1
1,2-Dichloropropane	ND	0.020	0.020	ND	0.092	0.092		1
1,3-Butadiene	0.056	0.020	0.020	0.124	0.044	0.044		1
1,3-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
1,4-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
Benzene	0.147	0.070	0.070	0.469	0.223	0.223		1
Bromodichloromethane	ND	0.020	0.010	ND	0.134	0.067		1
Bromoform	ND	0.020	0.020	ND	0.206	0.206		1
Carbon tetrachloride	0.054	0.020	0.020	0.339	0.126	0.126		1
Chlorobenzene	ND	0.020	0.020	ND	0.092	0.092		1
Chloroform	0.136	0.020	0.020	0.663	0.098	0.098		1
cis-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
Ethylbenzene	0.070	0.020	0.020	0.304	0.087	0.087		1
Methylene chloride	ND	0.500	0.500	ND	1.74	1.74		1
Methyl tert butyl ether	ND	0.020	0.020	ND	0.072	0.072		1
Naphthalene	0.025	0.050	0.025	0.131	0.262	0.131	J	1
XYLENE (TOTAL)	0.155	0.060	0.060	0.672	0.260	0.260		1
Tetrachloroethene	0.308	0.020	0.020	2.09	0.136	0.136		1
Toluene	0.789	0.050	0.050	2.97	0.188	0.188		1

Project Name: UNIFIRST WELLS G&H
Project Number: MA000989.0002.0003
Lab Number: L1105581
Report Date: 05/06/11

SAMPLE RESULTS

Lab ID: L1105581-07
Client ID: DUPIA042111
Sample Location: WOBURN, MA
Date Collected: 04/21/11 00:00
Date Received: 04/22/11
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
trans-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
trans-1,3-Dichloropropene	ND	0.020	0.020	ND	0.091	0.091		1
Trichloroethene	ND	0.020	0.020	ND	0.107	0.107		1
Vinyl chloride	ND	0.020	0.020	ND	0.051	0.051		1
Isopropylbenzene	ND	0.500	0.500	ND	2.46	2.46		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	87		60-140
bromochloromethane	84		60-140
chlorobenzene-d5	92		60-140

Project Name: UNIFIRST WELLS G&H
Project Number: MA000989.0002.0003
Lab Number: L1105581
Report Date: 05/06/11

SAMPLE RESULTS

Lab ID: L1105581-08
Client ID: TRIP BLANK
Sample Location: WOBURN, MA
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 04/30/11 18:55
Analyst: RY

Date Collected: 04/21/11 00:00
Date Received: 04/22/11
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
1,1,1-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1,2-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1-Dichloroethane	ND	0.020	0.020	ND	0.081	0.081		1
1,1-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
1,2,4-Trimethylbenzene	ND	0.020	0.020	ND	0.098	0.098		1
1,2-Dibromoethane	ND	0.020	0.010	ND	0.154	0.077		1
1,2-Dichloroethane	ND	0.020	0.020	ND	0.081	0.081		1
1,2-Dichloropropane	ND	0.020	0.020	ND	0.092	0.092		1
1,3-Butadiene	ND	0.020	0.020	ND	0.044	0.044		1
1,3-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
1,4-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
Benzene	ND	0.070	0.070	ND	0.223	0.223		1
Bromodichloromethane	ND	0.020	0.010	ND	0.134	0.067		1
Bromoform	ND	0.020	0.020	ND	0.206	0.206		1
Carbon tetrachloride	ND	0.020	0.020	ND	0.126	0.126		1
Chlorobenzene	ND	0.020	0.020	ND	0.092	0.092		1
Chloroform	ND	0.020	0.020	ND	0.098	0.098		1
cis-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
Ethylbenzene	ND	0.020	0.020	ND	0.087	0.087		1
Methylene chloride	ND	0.500	0.500	ND	1.74	1.74		1
Methyl tert butyl ether	ND	0.020	0.020	ND	0.072	0.072		1
Naphthalene	ND	0.050	0.025	ND	0.262	0.131		1
XYLENE (TOTAL)	ND	0.060	0.060	ND	0.260	0.260		1
Tetrachloroethene	ND	0.020	0.020	ND	0.136	0.136		1
Toluene	ND	0.050	0.050	ND	0.188	0.188		1

Project Name: UNIFIRST WELLS G&H
Project Number: MA000989.0002.0003
Lab Number: L1105581
Report Date: 05/06/11

SAMPLE RESULTS

Lab ID: L1105581-08
Client ID: TRIP BLANK
Sample Location: WOBURN, MA
Date Collected: 04/21/11 00:00
Date Received: 04/22/11
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
trans-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
trans-1,3-Dichloropropene	ND	0.020	0.020	ND	0.091	0.091		1
Trichloroethene	ND	0.020	0.020	ND	0.107	0.107		1
Vinyl chloride	ND	0.020	0.020	ND	0.051	0.051		1
Isopropylbenzene	ND	0.500	0.500	ND	2.46	2.46		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	94		60-140
bromochloromethane	99		60-140
chlorobenzene-d5	96		60-140

Project Name: UNIFIRST WELLS G&H
Project Number: MA000989.0002.0003
Lab Number: L1105581
Report Date: 05/06/11

SAMPLE RESULTS

Lab ID: L1105581-11
Client ID: SS-4
Sample Location: WOBURN, MA
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15-SIM
Analytical Date: 05/01/11 00:32
Analyst: RY

Date Collected: 04/22/11 13:10
Date Received: 04/22/11
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
1,1,1-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1,2-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1-Dichloroethane	ND	0.020	0.020	ND	0.081	0.081		1
1,1-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
1,2,4-Trimethylbenzene	ND	0.020	0.020	ND	0.098	0.098		1
1,2-Dibromoethane	ND	0.020	0.010	ND	0.154	0.077		1
1,2-Dichloroethane	ND	0.020	0.020	ND	0.081	0.081		1
1,2-Dichloropropane	ND	0.020	0.020	ND	0.092	0.092		1
1,3-Butadiene	ND	0.020	0.020	ND	0.044	0.044		1
1,3-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
1,4-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
Benzene	ND	0.070	0.070	ND	0.223	0.223		1
Bromodichloromethane	ND	0.020	0.010	ND	0.134	0.067		1
Bromoform	ND	0.020	0.020	ND	0.206	0.206		1
Carbon tetrachloride	0.027	0.020	0.020	0.170	0.126	0.126		1
Chlorobenzene	ND	0.020	0.020	ND	0.092	0.092		1
Chloroform	0.025	0.020	0.020	0.122	0.098	0.098		1
cis-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
Ethylbenzene	ND	0.020	0.020	ND	0.087	0.087		1
Methylene chloride	ND	0.500	0.500	ND	1.74	1.74		1
Methyl tert butyl ether	ND	0.020	0.020	ND	0.072	0.072		1
Naphthalene	ND	0.050	0.025	ND	0.262	0.131		1
XYLENE (TOTAL)	ND	0.060	0.060	ND	0.260	0.260		1
Tetrachloroethene	1.77	0.020	0.020	12.0	0.136	0.136		1
Toluene	ND	0.050	0.050	ND	0.188	0.188		1

Project Name: UNIFIRST WELLS G&H
Project Number: MA000989.0002.0003
Lab Number: L1105581
Report Date: 05/06/11

SAMPLE RESULTS

Lab ID: L1105581-11
Client ID: SS-4
Sample Location: WOBURN, MA
Date Collected: 04/22/11 13:10
Date Received: 04/22/11
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
trans-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
trans-1,3-Dichloropropene	ND	0.020	0.020	ND	0.091	0.091		1
Trichloroethene	ND	0.020	0.020	ND	0.107	0.107		1
Vinyl chloride	ND	0.020	0.020	ND	0.051	0.051		1
Isopropylbenzene	ND	0.500	0.500	ND	2.46	2.46		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	81		60-140
bromochloromethane	82		60-140
chlorobenzene-d5	88		60-140

Project Name: UNIFIRST WELLS G&H
Project Number: MA000989.0002.0003
Lab Number: L1105581
Report Date: 05/06/11

SAMPLE RESULTS

Lab ID: L1105581-12
Client ID: SS-5
Sample Location: WOBURN, MA
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15-SIM
Analytical Date: 05/01/11 01:45
Analyst: RY

Date Collected: 04/22/11 12:52
Date Received: 04/22/11
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
1,1,1-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1,2-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1-Dichloroethane	ND	0.020	0.020	ND	0.081	0.081		1
1,1-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
1,2,4-Trimethylbenzene	ND	0.020	0.020	ND	0.098	0.098		1
1,2-Dibromoethane	ND	0.020	0.010	ND	0.154	0.077		1
1,2-Dichloroethane	ND	0.020	0.020	ND	0.081	0.081		1
1,2-Dichloropropane	ND	0.020	0.020	ND	0.092	0.092		1
1,3-Butadiene	ND	0.020	0.020	ND	0.044	0.044		1
1,3-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
1,4-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
Benzene	ND	0.070	0.070	ND	0.223	0.223		1
Bromodichloromethane	ND	0.020	0.010	ND	0.134	0.067		1
Bromoform	ND	0.020	0.020	ND	0.206	0.206		1
Carbon tetrachloride	0.052	0.020	0.020	0.327	0.126	0.126		1
Chlorobenzene	ND	0.020	0.020	ND	0.092	0.092		1
Chloroform	0.037	0.020	0.020	0.180	0.098	0.098		1
cis-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
Ethylbenzene	ND	0.020	0.020	ND	0.087	0.087		1
Methylene chloride	ND	0.500	0.500	ND	1.74	1.74		1
Methyl tert butyl ether	ND	0.020	0.020	ND	0.072	0.072		1
Naphthalene	ND	0.050	0.025	ND	0.262	0.131		1
XYLENE (TOTAL)	ND	0.060	0.060	ND	0.260	0.260		1
Tetrachloroethene	0.052	0.020	0.020	0.352	0.136	0.136		1
Toluene	ND	0.050	0.050	ND	0.188	0.188		1

Project Name: UNIFIRST WELLS G&H
Project Number: MA000989.0002.0003
Lab Number: L1105581
Report Date: 05/06/11

SAMPLE RESULTS

Lab ID: L1105581-12
Client ID: SS-5
Sample Location: WOBURN, MA
Date Collected: 04/22/11 12:52
Date Received: 04/22/11
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
trans-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
trans-1,3-Dichloropropene	ND	0.020	0.020	ND	0.091	0.091		1
Trichloroethene	ND	0.020	0.020	ND	0.107	0.107		1
Vinyl chloride	ND	0.020	0.020	ND	0.051	0.051		1
Isopropylbenzene	ND	0.500	0.500	ND	2.46	2.46		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	81		60-140
bromochloromethane	90		60-140
chlorobenzene-d5	86		60-140

Project Name: UNIFIRST WELLS G&H
Project Number: MA000989.0002.0003
Lab Number: L1105581
Report Date: 05/06/11

SAMPLE RESULTS

Lab ID: L1105581-13
Client ID: DUPSS42211
Sample Location: WOBURN, MA
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15-SIM
Analytical Date: 05/01/11 02:22
Analyst: RY

Date Collected: 04/22/11 00:00
Date Received: 04/22/11
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
1,1,1-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1,2-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1-Dichloroethane	ND	0.020	0.020	ND	0.081	0.081		1
1,1-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
1,2,4-Trimethylbenzene	ND	0.020	0.020	ND	0.098	0.098		1
1,2-Dibromoethane	ND	0.020	0.010	ND	0.154	0.077		1
1,2-Dichloroethane	ND	0.020	0.020	ND	0.081	0.081		1
1,2-Dichloropropane	ND	0.020	0.020	ND	0.092	0.092		1
1,3-Butadiene	ND	0.020	0.020	ND	0.044	0.044		1
1,3-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
1,4-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
Benzene	ND	0.070	0.070	ND	0.223	0.223		1
Bromodichloromethane	ND	0.020	0.010	ND	0.134	0.067		1
Bromoform	ND	0.020	0.020	ND	0.206	0.206		1
Carbon tetrachloride	0.026	0.020	0.020	0.163	0.126	0.126		1
Chlorobenzene	ND	0.020	0.020	ND	0.092	0.092		1
Chloroform	0.023	0.020	0.020	0.112	0.098	0.098		1
cis-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
Ethylbenzene	ND	0.020	0.020	ND	0.087	0.087		1
Methylene chloride	ND	0.500	0.500	ND	1.74	1.74		1
Methyl tert butyl ether	ND	0.020	0.020	ND	0.072	0.072		1
Naphthalene	ND	0.050	0.025	ND	0.262	0.131		1
XYLENE (TOTAL)	ND	0.060	0.060	ND	0.260	0.260		1
Tetrachloroethene	1.67	0.020	0.020	11.3	0.136	0.136		1
Toluene	0.062	0.050	0.050	0.233	0.188	0.188		1

Project Name: UNIFIRST WELLS G&H
Project Number: MA000989.0002.0003
Lab Number: L1105581
Report Date: 05/06/11

SAMPLE RESULTS

Lab ID: L1105581-13
Client ID: DUPSS42211
Sample Location: WOBURN, MA
Date Collected: 04/22/11 00:00
Date Received: 04/22/11
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
trans-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
trans-1,3-Dichloropropene	ND	0.020	0.020	ND	0.091	0.091		1
Trichloroethene	ND	0.020	0.020	ND	0.107	0.107		1
Vinyl chloride	ND	0.020	0.020	ND	0.051	0.051		1
Isopropylbenzene	ND	0.500	0.500	ND	2.46	2.46		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	82		60-140
bromochloromethane	84		60-140
chlorobenzene-d5	88		60-140

Project Name: UNIFIRST WELLS G&H
Project Number: MA000989.0002.0003

Lab Number: L1105581
Report Date: 05/06/11

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15-SIM
Analytical Date: 04/30/11 18:09

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab for sample(s): 01-13 Batch: WG465568-4								
1,1,1-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1,2-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1-Dichloroethane	ND	0.020	0.020	ND	0.081	0.081		1
1,1-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
1,2,4-Trimethylbenzene	ND	0.020	0.020	ND	0.098	0.098		1
1,2-Dibromoethane	ND	0.020	0.010	ND	0.154	0.077		1
1,2-Dichloroethane	ND	0.020	0.020	ND	0.081	0.081		1
1,2-Dichloropropane	ND	0.020	0.020	ND	0.092	0.092		1
1,3-Butadiene	ND	0.020	0.020	ND	0.044	0.044		1
1,3-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
1,4-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
Benzene	ND	0.070	0.070	ND	0.223	0.223		1
Bromodichloromethane	ND	0.020	0.010	ND	0.134	0.067		1
Bromoform	ND	0.020	0.020	ND	0.206	0.206		1
Carbon tetrachloride	ND	0.020	0.020	ND	0.126	0.126		1
Chlorobenzene	ND	0.020	0.020	ND	0.092	0.092		1
Chloroform	ND	0.020	0.020	ND	0.098	0.098		1
cis-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
Ethylbenzene	ND	0.020	0.020	ND	0.087	0.087		1
Methylene chloride	ND	0.500	0.500	ND	1.74	1.74		1
Methyl tert butyl ether	ND	0.020	0.020	ND	0.072	0.072		1
Naphthalene	0.025	0.050	0.025	0.131	0.262	0.131	J	1
XYLENE (TOTAL)	ND	0.060	0.060	ND	0.260	0.260		1
Tetrachloroethene	ND	0.020	0.020	ND	0.136	0.136		1
Toluene	ND	0.050	0.050	ND	0.188	0.188		1

Project Name: UNIFIRST WELLS G&H
Project Number: MA000989.0002.0003
Lab Number: L1105581
Report Date: 05/06/11

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15-SIM
Analytical Date: 04/30/11 18:09

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab for sample(s): 01-13 Batch: WG465568-4								
trans-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
trans-1,3-Dichloropropene	ND	0.020	0.020	ND	0.091	0.091		1
Trichloroethene	ND	0.020	0.020	ND	0.107	0.107		1
Vinyl chloride	ND	0.020	0.020	ND	0.051	0.051		1
Isopropylbenzene	ND	0.500	0.500	ND	2.46	2.46		1

Lab Control Sample Analysis

Batch Quality Control

Project Name: UNIFIRST WELLS G&H
Project Number: MA000989.0002.0003

Lab Number: L1105581
Report Date: 05/06/11

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 01-13 Batch: WG465568-3								
1,1,1-Trichloroethane	77		-		70-130	-		25
1,1,2-Trichloroethane	90		-		70-130	-		25
1,1-Dichloroethane	80		-		70-130	-		25
1,1-Dichloroethene	81		-		70-130	-		25
1,2,4-Trimethylbenzene	111		-		70-130	-		25
1,2-Dibromoethane	107		-		70-130	-		25
1,2-Dichloroethane	80		-		70-130	-		25
1,2-Dichloropropane	85		-		70-130	-		25
1,3-Butadiene	87		-		70-130	-		25
1,3-Dichlorobenzene	116		-		70-130	-		25
1,4-Dichlorobenzene	113		-		70-130	-		25
Benzene	78		-		70-130	-		25
Bromodichloromethane	76		-		70-130	-		25
Bromoform	97		-		70-130	-		25
Carbon tetrachloride	76		-		70-130	-		25
Chlorobenzene	105		-		70-130	-		25
Chloroform	89		-		70-130	-		25
cis-1,2-Dichloroethene	88		-		70-130	-		25
Ethylbenzene	105		-		70-130	-		25
Methylene chloride	76		-		70-130	-		25
Methyl tert butyl ether	74		-		70-130	-		25

Lab Control Sample Analysis

Batch Quality Control

Project Name: UNIFIRST WELLS G&H
Project Number: MA000989.0002.0003

Lab Number: L1105581
Report Date: 05/06/11

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 01-13 Batch: WG465568-3								
Naphthalene	114		-		70-130	-		25
p/m-Xylene	107		-		70-130	-		25
o-Xylene	106		-		70-130	-		25
Tetrachloroethene	105		-		70-130	-		25
Toluene	92		-		70-130	-		25
trans-1,2-Dichloroethene	75		-		70-130	-		25
trans-1,3-Dichloropropene	71		-		70-130	-		25
Trichloroethene	88		-		70-130	-		25
Vinyl chloride	89		-		70-130	-		25
Isopropylbenzene	116		-		70-130	-		25

Lab Duplicate Analysis
Batch Quality Control

Project Name: UNIFIRST WELLS G&H
Project Number: MA000989.0002.00(

Lab Number: L1105581
Report Date: 05/06/11

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 01-13 QC Batch ID: WG465568-5 QC Sample: L1105581-11 Client ID: SS-4						
1,1,1-Trichloroethane	ND	ND	ppbV	NC		25
1,1,2-Trichloroethane	ND	ND	ppbV	NC		25
1,1-Dichloroethane	ND	ND	ppbV	NC		25
1,1-Dichloroethene	ND	ND	ppbV	NC		25
1,2,4-Trimethylbenzene	ND	ND	ppbV	NC		25
1,2-Dibromoethane	ND	ND	ppbV	NC		25
1,2-Dichloroethane	ND	ND	ppbV	NC		25
1,2-Dichloropropane	ND	ND	ppbV	NC		25
1,3-Butadiene	ND	ND	ppbV	NC		25
1,3-Dichlorobenzene	ND	ND	ppbV	NC		25
1,4-Dichlorobenzene	ND	ND	ppbV	NC		25
Benzene	ND	ND	ppbV	NC		25
Bromodichloromethane	ND	ND	ppbV	NC		25
Bromoform	ND	ND	ppbV	NC		25
Carbon tetrachloride	0.027	0.027	ppbV	0		25
Chlorobenzene	ND	ND	ppbV	NC		25
Chloroform	0.025	0.024	ppbV	4		25
cis-1,2-Dichloroethene	ND	ND	ppbV	NC		25
Ethylbenzene	ND	ND	ppbV	NC		25

Lab Duplicate Analysis
Batch Quality Control

Project Name: UNIFIRST WELLS G&H
Project Number: MA000989.0002.00(

Lab Number: L1105581
Report Date: 05/06/11

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 01-13 QC Batch ID: WG465568-5 QC Sample: L1105581-11 Client ID: SS-4					
Methylene chloride	ND	ND	ppbV	NC	25
Methyl tert butyl ether	ND	ND	ppbV	NC	25
Naphthalene	ND	ND	ppbV	NC	25
XYLENE (TOTAL)	ND	ND	ppbV	NC	25
Tetrachloroethene	1.77	1.76	ppbV	1	25
Toluene	ND	ND	ppbV	NC	25
trans-1,2-Dichloroethene	ND	ND	ppbV	NC	25
trans-1,3-Dichloropropene	ND	ND	ppbV	NC	25
Trichloroethene	ND	ND	ppbV	NC	25
Vinyl chloride	ND	ND	ppbV	NC	25
Isopropylbenzene	ND	ND	ppbV	NC	25

Project Name: UNIFIRST WELLS G&H **Lab Number:** L1105581

Project Number: MA000989.0002.0003 **Report Date:** 05/06/11

Canister and Flow Controller Information

Samplenum	Client ID	Media ID	Media Type	Cleaning Batch ID	Initial Pressure (in. Hg)	Pressure on Receipt (in. Hg)	Flow Out mL/min	Flow In mL/min	% RSD
L1105581-01	OA-01	0427	#16 AMB		-	-	3.3	3.6	9
L1105581-01	OA-01	1541	6.0L Can	L1105086-01	-29.6	-1.1	-	-	-
L1105581-05	IA-04	0420	#16 AMB		-	-	3.3	3.4	3
L1105581-05	IA-04	983	6.0L Can	L1105086-04	-29.6	-3.7	-	-	-
L1105581-06	IA-05	0476	#16 AMB		-	-	3.0	2.9	3
L1105581-06	IA-05	1565	6.0L Can	L1105086-02	-29.6	-6.4	-	-	-
L1105581-07	DUPIA042111	0017	#16 AMB		-	-	3.3	3.5	6
L1105581-07	DUPIA042111	1658	6.0L Can	L1105086-03	-29.6	-3.1	-	-	-
L1105581-08	TRIP BLANK	0480	#16 AMB		-	-	3.2	3.3	3
L1105581-08	TRIP BLANK	1644	6.0L Can	L1105086-15	-29.6	-29.6	-	-	-

Project Name: UNIFIRST WELLS G&H **Lab Number:** L1105581

Project Number: MA000989.0002.0003 **Report Date:** 05/06/11

Canister and Flow Controller Information

Samplenum	Client ID	Media ID	Media Type	Cleaning Batch ID	Initial Pressure (in. Hg)	Pressure on Receipt (in. Hg)	Flow Out mL/min	Flow In mL/min	% RSD
L1105581-11	SS-4	0285	#90 SV		-	-	160	160	0
L1105581-11	SS-4	623	6.0L Can	L1105086-08	-29.6	-4.2	-	-	-
L1105581-12	SS-5	0332	#90 SV		-	-	160	160	0
L1105581-12	SS-5	1672	6.0L Can	L1105086-07	-29.6	-5.6	-	-	-
L1105581-13	DUPSS42211	0058	#16 AMB		-	-	156	158	1
L1105581-13	DUPSS42211	789	6.0L Can	L1105086-06	-29.6	-5.2	-	-	-

Air Volatiles Can Certification

Project Name: UNIFIRST
Project Number: Not Specified
Lab Number: L1105086
Report Date: 05/06/11

Air Canister Certification Results

Lab ID: L1105086-01
Client ID: CAN 1541 FC 427
Sample Location: WOBURN
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 04/16/11 14:56
Analyst: RY

Date Collected: 04/15/11 00:00
Date Received: 04/15/11
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
1,1,1-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1,2-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1-Dichloroethane	ND	0.020	0.020	ND	0.081	0.081		1
1,1-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
1,2,4-Trimethylbenzene	ND	0.020	0.020	ND	0.098	0.098		1
1,2-Dibromoethane	ND	0.020	0.010	ND	0.154	0.077		1
1,2-Dichloroethane	ND	0.020	0.020	ND	0.081	0.081		1
1,2-Dichloropropane	ND	0.020	0.020	ND	0.092	0.092		1
1,3-Butadiene	ND	0.020	0.020	ND	0.044	0.044		1
1,3-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
1,4-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
Benzene	ND	0.070	0.070	ND	0.223	0.223		1
Bromodichloromethane	ND	0.020	0.010	ND	0.134	0.067		1
Bromoform	ND	0.020	0.020	ND	0.206	0.206		1
Carbon tetrachloride	ND	0.020	0.020	ND	0.126	0.126		1
Chlorobenzene	ND	0.020	0.020	ND	0.092	0.092		1
Chloroform	ND	0.020	0.020	ND	0.098	0.098		1
cis-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
Ethylbenzene	ND	0.020	0.020	ND	0.087	0.087		1
Methylene chloride	ND	0.500	0.500	ND	1.74	1.74		1
Methyl tert butyl ether	ND	0.020	0.020	ND	0.072	0.072		1
Naphthalene	ND	0.050	0.025	ND	0.262	0.131		1
p/m-Xylene	ND	0.040	0.040	ND	0.174	0.174		1
o-Xylene	ND	0.020	0.020	ND	0.087	0.087		1
XYLENE (TOTAL)	ND	0.060	0.060	ND	0.260	0.260		1

Project Name: UNIFIRST
Project Number: Not Specified
Lab Number: L1105086
Report Date: 05/06/11

Air Canister Certification Results

Lab ID: L1105086-01
Client ID: CAN 1541 FC 427
Sample Location: WOBURN
Date Collected: 04/15/11 00:00
Date Received: 04/15/11
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Tetrachloroethene	ND	0.020	0.020	ND	0.136	0.136		1
Toluene	ND	0.050	0.050	ND	0.188	0.188		1
trans-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
trans-1,3-Dichloropropene	ND	0.020	0.020	ND	0.091	0.091		1
Trichloroethene	ND	0.020	0.020	ND	0.107	0.107		1
Vinyl chloride	ND	0.020	0.020	ND	0.051	0.051		1
Isopropylbenzene	ND	0.500	0.500	ND	2.46	2.46		1

Project Name: UNIFIRST
Project Number: Not Specified
Lab Number: L1105086
Report Date: 05/06/11

Air Canister Certification Results

Lab ID: L1105086-01
Client ID: CAN 1541 FC 427
Sample Location: WOBURN
Date Collected: 04/15/11 00:00
Date Received: 04/15/11
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	104		60-140
bromochloromethane	98		60-140
chlorobenzene-d5	101		60-140

Project Name: UNIFIRST
Project Number: Not Specified
Lab Number: L1105086
Report Date: 05/06/11

Air Canister Certification Results

Lab ID: L1105086-02
Client ID: CAN 1565 FC 476
Sample Location: WOBURN
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 04/16/11 15:34
Analyst: RY

Date Collected: 04/15/11 00:00
Date Received: 04/15/11
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
1,1,1-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1,2-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1-Dichloroethane	ND	0.020	0.020	ND	0.081	0.081		1
1,1-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
1,2,4-Trimethylbenzene	ND	0.020	0.020	ND	0.098	0.098		1
1,2-Dibromoethane	ND	0.020	0.010	ND	0.154	0.077		1
1,2-Dichloroethane	ND	0.020	0.020	ND	0.081	0.081		1
1,2-Dichloropropane	ND	0.020	0.020	ND	0.092	0.092		1
1,3-Butadiene	ND	0.020	0.020	ND	0.044	0.044		1
1,3-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
1,4-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
Benzene	ND	0.070	0.070	ND	0.223	0.223		1
Bromodichloromethane	ND	0.020	0.010	ND	0.134	0.067		1
Bromoform	ND	0.020	0.020	ND	0.206	0.206		1
Carbon tetrachloride	ND	0.020	0.020	ND	0.126	0.126		1
Chlorobenzene	ND	0.020	0.020	ND	0.092	0.092		1
Chloroform	ND	0.020	0.020	ND	0.098	0.098		1
cis-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
Ethylbenzene	ND	0.020	0.020	ND	0.087	0.087		1
Methylene chloride	ND	0.500	0.500	ND	1.74	1.74		1
Methyl tert butyl ether	ND	0.020	0.020	ND	0.072	0.072		1
Naphthalene	ND	0.050	0.025	ND	0.262	0.131		1
p/m-Xylene	ND	0.040	0.040	ND	0.174	0.174		1
o-Xylene	ND	0.020	0.020	ND	0.087	0.087		1
XYLENE (TOTAL)	ND	0.060	0.060	ND	0.260	0.260		1

Project Name: UNIFIRST
Project Number: Not Specified
Lab Number: L1105086
Report Date: 05/06/11

Air Canister Certification Results

Lab ID: L1105086-02
Client ID: CAN 1565 FC 476
Sample Location: WOBURN
Date Collected: 04/15/11 00:00
Date Received: 04/15/11
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Tetrachloroethene	ND	0.020	0.020	ND	0.136	0.136		1
Toluene	ND	0.050	0.050	ND	0.188	0.188		1
trans-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
trans-1,3-Dichloropropene	ND	0.020	0.020	ND	0.091	0.091		1
Trichloroethene	ND	0.020	0.020	ND	0.107	0.107		1
Vinyl chloride	ND	0.020	0.020	ND	0.051	0.051		1
Isopropylbenzene	ND	0.500	0.500	ND	2.46	2.46		1

Project Name: UNIFIRST
Project Number: Not Specified
Lab Number: L1105086
Report Date: 05/06/11

Air Canister Certification Results

Lab ID: L1105086-02
Client ID: CAN 1565 FC 476
Sample Location: WOBURN
Date Collected: 04/15/11 00:00
Date Received: 04/15/11
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor

Volatile Organics in Air by SIM - Mansfield Lab

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	101		60-140
bromochloromethane	97		60-140
chlorobenzene-d5	99		60-140

Project Name: UNIFIRST
Project Number: Not Specified
Lab Number: L1105086
Report Date: 05/06/11

Air Canister Certification Results

Lab ID: L1105086-03
Client ID: CAN 1658 FC 017
Sample Location: WOBURN
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 04/16/11 16:12
Analyst: RY

Date Collected: 04/15/11 00:00
Date Received: 04/15/11
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
1,1,1-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1,2-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1-Dichloroethane	ND	0.020	0.020	ND	0.081	0.081		1
1,1-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
1,2,4-Trimethylbenzene	ND	0.020	0.020	ND	0.098	0.098		1
1,2-Dibromoethane	ND	0.020	0.010	ND	0.154	0.077		1
1,2-Dichloroethane	ND	0.020	0.020	ND	0.081	0.081		1
1,2-Dichloropropane	ND	0.020	0.020	ND	0.092	0.092		1
1,3-Butadiene	ND	0.020	0.020	ND	0.044	0.044		1
1,3-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
1,4-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
Benzene	ND	0.070	0.070	ND	0.223	0.223		1
Bromodichloromethane	ND	0.020	0.010	ND	0.134	0.067		1
Bromoform	ND	0.020	0.020	ND	0.206	0.206		1
Carbon tetrachloride	ND	0.020	0.020	ND	0.126	0.126		1
Chlorobenzene	ND	0.020	0.020	ND	0.092	0.092		1
Chloroform	ND	0.020	0.020	ND	0.098	0.098		1
cis-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
Ethylbenzene	ND	0.020	0.020	ND	0.087	0.087		1
Methylene chloride	ND	0.500	0.500	ND	1.74	1.74		1
Methyl tert butyl ether	ND	0.020	0.020	ND	0.072	0.072		1
Naphthalene	ND	0.050	0.025	ND	0.262	0.131		1
p/m-Xylene	ND	0.040	0.040	ND	0.174	0.174		1
o-Xylene	ND	0.020	0.020	ND	0.087	0.087		1
XYLENE (TOTAL)	ND	0.060	0.060	ND	0.260	0.260		1

Project Name: UNIFIRST
Project Number: Not Specified

Lab Number: L1105086
Report Date: 05/06/11

Air Canister Certification Results

Lab ID: L1105086-03
Client ID: CAN 1658 FC 017
Sample Location: WOBURN

Date Collected: 04/15/11 00:00
Date Received: 04/15/11
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Tetrachloroethene	ND	0.020	0.020	ND	0.136	0.136		1
Toluene	ND	0.050	0.050	ND	0.188	0.188		1
trans-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
trans-1,3-Dichloropropene	ND	0.020	0.020	ND	0.091	0.091		1
Trichloroethene	ND	0.020	0.020	ND	0.107	0.107		1
Vinyl chloride	ND	0.020	0.020	ND	0.051	0.051		1
Isopropylbenzene	ND	0.500	0.500	ND	2.46	2.46		1

Project Name: UNIFIRST
Project Number: Not Specified
Lab Number: L1105086
Report Date: 05/06/11

Air Canister Certification Results

Lab ID: L1105086-03
Client ID: CAN 1658 FC 017
Sample Location: WOBURN
Date Collected: 04/15/11 00:00
Date Received: 04/15/11
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	104		60-140
bromochloromethane	97		60-140
chlorobenzene-d5	100		60-140

Project Name: UNIFIRST
Project Number: Not Specified
Lab Number: L1105086
Report Date: 05/06/11

Air Canister Certification Results

Lab ID: L1105086-04
Client ID: CAN 983 FC 420
Sample Location: WOBURN
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 04/16/11 16:49
Analyst: RY

Date Collected: 04/15/11 00:00
Date Received: 04/15/11
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
1,1,1-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1,2-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1-Dichloroethane	ND	0.020	0.020	ND	0.081	0.081		1
1,1-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
1,2,4-Trimethylbenzene	ND	0.020	0.020	ND	0.098	0.098		1
1,2-Dibromoethane	ND	0.020	0.010	ND	0.154	0.077		1
1,2-Dichloroethane	ND	0.020	0.020	ND	0.081	0.081		1
1,2-Dichloropropane	ND	0.020	0.020	ND	0.092	0.092		1
1,3-Butadiene	ND	0.020	0.020	ND	0.044	0.044		1
1,3-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
1,4-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
Benzene	ND	0.070	0.070	ND	0.223	0.223		1
Bromodichloromethane	ND	0.020	0.010	ND	0.134	0.067		1
Bromoform	ND	0.020	0.020	ND	0.206	0.206		1
Carbon tetrachloride	ND	0.020	0.020	ND	0.126	0.126		1
Chlorobenzene	ND	0.020	0.020	ND	0.092	0.092		1
Chloroform	ND	0.020	0.020	ND	0.098	0.098		1
cis-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
Ethylbenzene	ND	0.020	0.020	ND	0.087	0.087		1
Methylene chloride	ND	0.500	0.500	ND	1.74	1.74		1
Methyl tert butyl ether	ND	0.020	0.020	ND	0.072	0.072		1
Naphthalene	ND	0.050	0.025	ND	0.262	0.131		1
p/m-Xylene	ND	0.040	0.040	ND	0.174	0.174		1
o-Xylene	ND	0.020	0.020	ND	0.087	0.087		1
XYLENE (TOTAL)	ND	0.060	0.060	ND	0.260	0.260		1

Project Name: UNIFIRST
Project Number: Not Specified
Lab Number: L1105086
Report Date: 05/06/11

Air Canister Certification Results

Lab ID: L1105086-04
Client ID: CAN 983 FC 420
Sample Location: WOBURN
Date Collected: 04/15/11 00:00
Date Received: 04/15/11
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Tetrachloroethene	ND	0.020	0.020	ND	0.136	0.136		1
Toluene	ND	0.050	0.050	ND	0.188	0.188		1
trans-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
trans-1,3-Dichloropropene	ND	0.020	0.020	ND	0.091	0.091		1
Trichloroethene	ND	0.020	0.020	ND	0.107	0.107		1
Vinyl chloride	ND	0.020	0.020	ND	0.051	0.051		1
Isopropylbenzene	ND	0.500	0.500	ND	2.46	2.46		1

Project Name: UNIFIRST ***Lab Number:*** L1105086

Project Number: Not Specified ***Report Date:*** 05/06/11

Air Canister Certification Results

Lab ID: L1105086-04 Date Collected: 04/15/11 00:00

Client ID: CAN 983 FC 420 Date Received: 04/15/11

Sample Location: WOBURN Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor

Volatile Organics in Air by SIM - Mansfield Lab

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	102		60-140
bromochloromethane	97		60-140
chlorobenzene-d5	100		60-140

Project Name: UNIFIRST
Project Number: Not Specified
Lab Number: L1105086
Report Date: 05/06/11

Air Canister Certification Results

Lab ID: L1105086-06
Client ID: CAN 789 FC 058
Sample Location: WOBURN
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 04/16/11 18:04
Analyst: RY

Date Collected: 04/15/11 00:00
Date Received: 04/15/11
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
1,1,1-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1,2-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1-Dichloroethane	ND	0.020	0.020	ND	0.081	0.081		1
1,1-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
1,2,4-Trimethylbenzene	ND	0.020	0.020	ND	0.098	0.098		1
1,2-Dibromoethane	ND	0.020	0.010	ND	0.154	0.077		1
1,2-Dichloroethane	ND	0.020	0.020	ND	0.081	0.081		1
1,2-Dichloropropane	ND	0.020	0.020	ND	0.092	0.092		1
1,3-Butadiene	ND	0.020	0.020	ND	0.044	0.044		1
1,3-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
1,4-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
Benzene	ND	0.070	0.070	ND	0.223	0.223		1
Bromodichloromethane	ND	0.020	0.010	ND	0.134	0.067		1
Bromoform	ND	0.020	0.020	ND	0.206	0.206		1
Carbon tetrachloride	ND	0.020	0.020	ND	0.126	0.126		1
Chlorobenzene	ND	0.020	0.020	ND	0.092	0.092		1
Chloroform	ND	0.020	0.020	ND	0.098	0.098		1
cis-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
Ethylbenzene	ND	0.020	0.020	ND	0.087	0.087		1
Methylene chloride	ND	0.500	0.500	ND	1.74	1.74		1
Methyl tert butyl ether	ND	0.020	0.020	ND	0.072	0.072		1
Naphthalene	ND	0.050	0.025	ND	0.262	0.131		1
p/m-Xylene	ND	0.040	0.040	ND	0.174	0.174		1
o-Xylene	ND	0.020	0.020	ND	0.087	0.087		1
XYLENE (TOTAL)	ND	0.060	0.060	ND	0.260	0.260		1

Project Name: UNIFIRST
Project Number: Not Specified
Lab Number: L1105086
Report Date: 05/06/11

Air Canister Certification Results

Lab ID: L1105086-06
Client ID: CAN 789 FC 058
Sample Location: WOBURN
Date Collected: 04/15/11 00:00
Date Received: 04/15/11
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Tetrachloroethene	ND	0.020	0.020	ND	0.136	0.136		1
Toluene	ND	0.050	0.050	ND	0.188	0.188		1
trans-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
trans-1,3-Dichloropropene	ND	0.020	0.020	ND	0.091	0.091		1
Trichloroethene	ND	0.020	0.020	ND	0.107	0.107		1
Vinyl chloride	ND	0.020	0.020	ND	0.051	0.051		1
Isopropylbenzene	ND	0.500	0.500	ND	2.46	2.46		1

Project Name: UNIFIRST
Project Number: Not Specified
Lab Number: L1105086
Report Date: 05/06/11

Air Canister Certification Results

Lab ID: L1105086-06
Client ID: CAN 789 FC 058
Sample Location: WOBURN
Date Collected: 04/15/11 00:00
Date Received: 04/15/11
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor

Volatile Organics in Air by SIM - Mansfield Lab

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	96		60-140
bromochloromethane	92		60-140
chlorobenzene-d5	99		60-140

Project Name: UNIFIRST
Project Number: Not Specified
Lab Number: L1105086
Report Date: 05/06/11

Air Canister Certification Results

Lab ID: L1105086-07
Client ID: CAN 1672 FC 332
Sample Location: WOBURN
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 04/16/11 18:42
Analyst: RY

Date Collected: 04/15/11 00:00
Date Received: 04/15/11
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
1,1,1-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1,2-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1-Dichloroethane	ND	0.020	0.020	ND	0.081	0.081		1
1,1-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
1,2,4-Trimethylbenzene	ND	0.020	0.020	ND	0.098	0.098		1
1,2-Dibromoethane	ND	0.020	0.010	ND	0.154	0.077		1
1,2-Dichloroethane	ND	0.020	0.020	ND	0.081	0.081		1
1,2-Dichloropropane	ND	0.020	0.020	ND	0.092	0.092		1
1,3-Butadiene	ND	0.020	0.020	ND	0.044	0.044		1
1,3-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
1,4-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
Benzene	ND	0.070	0.070	ND	0.223	0.223		1
Bromodichloromethane	ND	0.020	0.010	ND	0.134	0.067		1
Bromoform	ND	0.020	0.020	ND	0.206	0.206		1
Carbon tetrachloride	ND	0.020	0.020	ND	0.126	0.126		1
Chlorobenzene	ND	0.020	0.020	ND	0.092	0.092		1
Chloroform	ND	0.020	0.020	ND	0.098	0.098		1
cis-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
Ethylbenzene	ND	0.020	0.020	ND	0.087	0.087		1
Methylene chloride	ND	0.500	0.500	ND	1.74	1.74		1
Methyl tert butyl ether	ND	0.020	0.020	ND	0.072	0.072		1
Naphthalene	ND	0.050	0.025	ND	0.262	0.131		1
p/m-Xylene	ND	0.040	0.040	ND	0.174	0.174		1
o-Xylene	ND	0.020	0.020	ND	0.087	0.087		1
XYLENE (TOTAL)	ND	0.060	0.060	ND	0.260	0.260		1

Project Name: UNIFIRST
Project Number: Not Specified
Lab Number: L1105086
Report Date: 05/06/11

Air Canister Certification Results

Lab ID: L1105086-07
Client ID: CAN 1672 FC 332
Sample Location: WOBURN
Date Collected: 04/15/11 00:00
Date Received: 04/15/11
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Tetrachloroethene	ND	0.020	0.020	ND	0.136	0.136		1
Toluene	ND	0.050	0.050	ND	0.188	0.188		1
trans-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
trans-1,3-Dichloropropene	ND	0.020	0.020	ND	0.091	0.091		1
Trichloroethene	ND	0.020	0.020	ND	0.107	0.107		1
Vinyl chloride	ND	0.020	0.020	ND	0.051	0.051		1
Isopropylbenzene	ND	0.500	0.500	ND	2.46	2.46		1

Project Name: UNIFIRST
Project Number: Not Specified
Lab Number: L1105086
Report Date: 05/06/11

Air Canister Certification Results

Lab ID: L1105086-07
Client ID: CAN 1672 FC 332
Sample Location: WOBURN
Date Collected: 04/15/11 00:00
Date Received: 04/15/11
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor

Volatile Organics in Air by SIM - Mansfield Lab

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	96		60-140
bromochloromethane	94		60-140
chlorobenzene-d5	99		60-140

Project Name: UNIFIRST
Project Number: Not Specified

Lab Number: L1105086
Report Date: 05/06/11

Air Canister Certification Results

Lab ID: L1105086-08
Client ID: CAN 623 FC 285
Sample Location: WOBURN
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 04/16/11 19:19
Analyst: RY

Date Collected: 04/15/11 00:00
Date Received: 04/15/11
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
1,1,1-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1,2-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1-Dichloroethane	ND	0.020	0.020	ND	0.081	0.081		1
1,1-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
1,2,4-Trimethylbenzene	ND	0.020	0.020	ND	0.098	0.098		1
1,2-Dibromoethane	ND	0.020	0.010	ND	0.154	0.077		1
1,2-Dichloroethane	ND	0.020	0.020	ND	0.081	0.081		1
1,2-Dichloropropane	ND	0.020	0.020	ND	0.092	0.092		1
1,3-Butadiene	ND	0.020	0.020	ND	0.044	0.044		1
1,3-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
1,4-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
Benzene	ND	0.070	0.070	ND	0.223	0.223		1
Bromodichloromethane	ND	0.020	0.010	ND	0.134	0.067		1
Bromoform	ND	0.020	0.020	ND	0.206	0.206		1
Carbon tetrachloride	ND	0.020	0.020	ND	0.126	0.126		1
Chlorobenzene	ND	0.020	0.020	ND	0.092	0.092		1
Chloroform	ND	0.020	0.020	ND	0.098	0.098		1
cis-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
Ethylbenzene	ND	0.020	0.020	ND	0.087	0.087		1
Methylene chloride	ND	0.500	0.500	ND	1.74	1.74		1
Methyl tert butyl ether	ND	0.020	0.020	ND	0.072	0.072		1
Naphthalene	ND	0.050	0.025	ND	0.262	0.131		1
p/m-Xylene	ND	0.040	0.040	ND	0.174	0.174		1
o-Xylene	ND	0.020	0.020	ND	0.087	0.087		1
XYLENE (TOTAL)	ND	0.060	0.060	ND	0.260	0.260		1

Project Name: UNIFIRST
Project Number: Not Specified
Lab Number: L1105086
Report Date: 05/06/11

Air Canister Certification Results

Lab ID: L1105086-08
Client ID: CAN 623 FC 285
Sample Location: WOBURN
Date Collected: 04/15/11 00:00
Date Received: 04/15/11
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Tetrachloroethene	ND	0.020	0.020	ND	0.136	0.136		1
Toluene	ND	0.050	0.050	ND	0.188	0.188		1
trans-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
trans-1,3-Dichloropropene	ND	0.020	0.020	ND	0.091	0.091		1
Trichloroethene	ND	0.020	0.020	ND	0.107	0.107		1
Vinyl chloride	ND	0.020	0.020	ND	0.051	0.051		1
Isopropylbenzene	ND	0.500	0.500	ND	2.46	2.46		1

Project Name: UNIFIRST
Project Number: Not Specified

Lab Number: L1105086
Report Date: 05/06/11

Air Canister Certification Results

Lab ID: L1105086-08
Client ID: CAN 623 FC 285
Sample Location: WOBURN

Date Collected: 04/15/11 00:00
Date Received: 04/15/11
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	103		60-140
bromochloromethane	97		60-140
chlorobenzene-d5	100		60-140

Project Name: UNIFIRST
Project Number: Not Specified

Lab Number: L1105086
Report Date: 05/06/11

Air Canister Certification Results

Lab ID: L1105086-15
Client ID: CAN 1644 FC 480
Sample Location: WOBURN
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 04/16/11 23:40
Analyst: RY

Date Collected: 04/15/11 00:00
Date Received: 04/15/11
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
1,1,1-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1,2-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1-Dichloroethane	ND	0.020	0.020	ND	0.081	0.081		1
1,1-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
1,2,4-Trimethylbenzene	ND	0.020	0.020	ND	0.098	0.098		1
1,2-Dibromoethane	ND	0.020	0.010	ND	0.154	0.077		1
1,2-Dichloroethane	ND	0.020	0.020	ND	0.081	0.081		1
1,2-Dichloropropane	ND	0.020	0.020	ND	0.092	0.092		1
1,3-Butadiene	ND	0.020	0.020	ND	0.044	0.044		1
1,3-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
1,4-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
Benzene	ND	0.070	0.070	ND	0.223	0.223		1
Bromodichloromethane	ND	0.020	0.010	ND	0.134	0.067		1
Bromoform	ND	0.020	0.020	ND	0.206	0.206		1
Carbon tetrachloride	ND	0.020	0.020	ND	0.126	0.126		1
Chlorobenzene	ND	0.020	0.020	ND	0.092	0.092		1
Chloroform	ND	0.020	0.020	ND	0.098	0.098		1
cis-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
Ethylbenzene	ND	0.020	0.020	ND	0.087	0.087		1
Methylene chloride	ND	0.500	0.500	ND	1.74	1.74		1
Methyl tert butyl ether	ND	0.020	0.020	ND	0.072	0.072		1
Naphthalene	ND	0.050	0.025	ND	0.262	0.131		1
p/m-Xylene	ND	0.040	0.040	ND	0.174	0.174		1
o-Xylene	ND	0.020	0.020	ND	0.087	0.087		1
XYLENE (TOTAL)	ND	0.060	0.060	ND	0.260	0.260		1

Project Name: UNIFIRST
Project Number: Not Specified
Lab Number: L1105086
Report Date: 05/06/11

Air Canister Certification Results

Lab ID: L1105086-15
Client ID: CAN 1644 FC 480
Sample Location: WOBURN
Date Collected: 04/15/11 00:00
Date Received: 04/15/11
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Tetrachloroethene	ND	0.020	0.020	ND	0.136	0.136		1
Toluene	ND	0.050	0.050	ND	0.188	0.188		1
trans-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
trans-1,3-Dichloropropene	ND	0.020	0.020	ND	0.091	0.091		1
Trichloroethene	ND	0.020	0.020	ND	0.107	0.107		1
Vinyl chloride	ND	0.020	0.020	ND	0.051	0.051		1
Isopropylbenzene	ND	0.500	0.500	ND	2.46	2.46		1

Project Name: UNIFIRST
Project Number: Not Specified

Lab Number: L1105086
Report Date: 05/06/11

Air Canister Certification Results

Lab ID: L1105086-15
Client ID: CAN 1644 FC 480
Sample Location: WOBURN

Date Collected: 04/15/11 00:00
Date Received: 04/15/11
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor

Volatile Organics in Air by SIM - Mansfield Lab

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	88		60-140
bromochloromethane	90		60-140
chlorobenzene-d5	92		60-140

Project Name: UNIFIRST WELLS G&H
Project Number: MA000989.0002.0003

Lab Number: L1105581
Report Date: 05/06/11

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Reagent H2O Preserved Vials Frozen on: NA

Cooler Information Custody Seal
Cooler
N/A Present/Intact

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1105581-01A	Canister - 6 Liter	N/A	NA		Y	Present/Intact	TO15-SIM-UNI(30)
L1105581-02A	Canister - 6 Liter	N/A	NA		Y	Present/Intact	TO15-SIM-UNI(30)
L1105581-03A	Canister - 6 Liter	N/A	NA		Y	Present/Intact	TO15-SIM-UNI(30)
L1105581-04A	Canister - 6 Liter	N/A	NA		Y	Present/Intact	TO15-SIM-UNI(30)
L1105581-05A	Canister - 6 Liter	N/A	NA		Y	Present/Intact	TO15-SIM-UNI(30)
L1105581-06A	Canister - 6 Liter	N/A	NA		Y	Present/Intact	TO15-SIM-UNI(30)
L1105581-07A	Canister - 6 Liter	N/A	NA		Y	Present/Intact	TO15-SIM-UNI(30)
L1105581-08A	Canister - 6 Liter	N/A	NA		Y	Present/Intact	TO15-SIM-UNI(30)
L1105581-09A	Canister - 6 Liter	N/A	NA		Y	Present/Intact	TO15-SIM-UNI(30)
L1105581-10A	Canister - 6 Liter	N/A	NA		Y	Present/Intact	TO15-SIM-UNI(30)
L1105581-11A	Canister - 6 Liter	N/A	NA		Y	Present/Intact	TO15-SIM-UNI(30)
L1105581-12A	Canister - 6 Liter	N/A	NA		Y	Present/Intact	TO15-SIM-UNI(30)
L1105581-13A	Canister - 6 Liter	N/A	NA		Y	Present/Intact	TO15-SIM-UNI(30)

*Values in parentheses indicate holding time in days

Project Name:	UNIFIRST WELLS G&H	**Lab Number:**	L1105581
Project Number:	MA000989.0002.0003	**Report Date:**	05/06/11

GLOSSARY

Acronyms

EPA · Environmental Protection Agency.

LCS · Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD · Laboratory Control Sample Duplicate: Refer to LCS.

MDL · Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS · Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.

MSD · Matrix Spike Sample Duplicate: Refer to MS.

NA · Not Applicable.

NC · Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NI · Not Ignitable.

RL · Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD · Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Data Qualifiers

A · Spectra identified as "Aldol Condensation Product".

B · The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than five times (5x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank.

C · Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D · Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E · Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G · The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H · The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I · The RPD between the results for the two columns exceeds the method-specified criteria; however, the lower value has been reported due to obvious interference.

P · The RPD between the results for the two columns exceeds the method-specified criteria.

Report Format: DU Report with "J" Qualifiers

Project Name:	UNIFIRST WELLS G&H	**Lab Number:**	L1105581
Project Number:	MA000989.0002.0003	**Report Date:**	05/06/11

Data Qualifiers

Q · The quality control sample exceeds the associated acceptance criteria. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R · Analytical results are from sample re-analysis.

RE · Analytical results are from sample re-extraction.

J · Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL). This represents an estimated concentration for Tentatively Identified Compounds (TICs).

ND · Not detected at the method detection limit (MDL) for the sample.

Report Format: DU Report with "J" Qualifiers

REFERENCES

48 Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air. Second Edition. EPA/625/R-96/010b, January 1999.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certificate/Approval Program Summary

Last revised March 23, 2011 – Mansfield Facility

The following list includes only those analytes/methods for which certification/approval is currently held.
For a complete listing of analytes for the referenced methods, please contact your Alpha Customer Service Representative.

Connecticut Department of Public Health Certificate/Lab ID: PH-0141.

Wastewater/Non-Potable Water (Inorganic Parameters: pH, Turbidity, Conductivity, Alkalinity, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Strontium, Thallium, Tin, Vanadium, Zinc, Total Residue (Solids), Total Suspended Solids (non-filterable), Total Cyanide. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Acid Extractables, Benzidines, Phthalate Esters, Nitrosamines, Nitroaromatics & Isophorone, PAHs, Haloethers, Chlorinated Hydrocarbons, Volatile Organics.)

Solid Waste/Soil (Inorganic Parameters: pH, Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Vanadium, Zinc, Total Organic Carbon, Total Cyanide, Corrosivity, TCLP 1311. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Volatile Organics, Acid Extractables, Benzidines, Phthalates, Nitrosamines, Nitroaromatics & Cyclic Ketones, PAHs, Haloethers, Chlorinated Hydrocarbons.)

Florida Department of Health Certificate/Lab ID: E87814. ***NELAP Accredited.***

Non-Potable Water (Inorganic Parameters: SM2320B, SM2540D, SM2540G.)

Solid & Chemical Materials (Inorganic Parameters: 6020, 7470, 7471, 9045. Organic Parameters: EPA 8260, 8270, 8082, 8081.)

Air & Emissions (EPA TO-15.)

Louisiana Department of Environmental Quality Certificate/Lab ID: 03090. ***NELAP Accredited.***

Non-Potable Water (Inorganic Parameters: EPA 180.1, 245.7, 1631E, 3020, 6020A, 7470A, 9040, 9050A, SM2320B, 2540D, 2540G, 4500H-B, Organic Parameters: EPA 3510C, 3580A, 3630C, 3640A, 3660B, 3665A, 5030B, 8015D, 3570, 8081B, 8082A, 8260B, 8270C.)

Solid & Chemical Materials (Inorganic Parameters: EPA 1311, 3050, 3051A, 3060A, 6020A, 7196A, 7470A, 7471B, 7474, 9040B, 9045C, 9060. Organic Parameters: EPA 3540C, 3570B, 3580A, 3630C, 3640A, 3660, 3665A, 5035, 8015D, 8081B, 8082A, 8260B, 8270C.)

Biological Tissue (Inorganic Parameters: EPA 6020A. Organic Parameters: EPA 3570, 3510C, 3610B, 3630C, 3640A, 8270C.)

Air & Emissions (EPA TO-15.)

New Hampshire Department of Environmental Services Certificate/Lab ID: 2206. ***NELAP Accredited.***

Non-Potable Water (Inorganic Parameters: EPA, 245.1, 245.7, 1631E, 180.1, 6020A, 7470A, 9040B, 9050A, SM2540D, 2540G, 4500H+B, 2320B. Organic Parameters: EPA 8081, 8082, 8260B, 8270C.)

Solid & Chemical Materials (Inorganic Parameters: SW-846 1311, 1312, 3050B, 3051A, 3060A, 6020A, 7470A, 7471A, 9040B, 9045C, 7196A. Organic Parameters: SW-846 3540C, 3580, 3630C, 3640A, 3660B, 3665A, 5035, 8260B, 8270C, 8015D, 8082, 8081A.)

New Jersey Department of Environmental Protection Certificate/Lab ID: MA015. ***NELAP Accredited.***

Non-Potable Water (Inorganic Parameters: SW-846 1312, 3010, 3020A, 3015, SM2320B, EPA 200.8, SM2540D, 2540G, EPA 120.1, SM2510B, EPA 180.1, 245.1, 1631E, SW-846 7470A, 9040B, 6020, 9010B, 9014 Organic Parameters: SW-846 3510C, 3580A, 5030B, 5035L, 5035H, 3630C, 3640C, 3660B, 3665A, 8015B 8081A, 8082, 8260B, 8270C)

Solid & Chemical Materials (Inorganic Parameters: SW-846 6020, 9010B, 9014, 1311, 1312, 3050B, 3051, 3060A, 7196A, 7470A, 7471A, 9040B, 9045C, 9060. Organic Parameters: SW-846 3540C, 3570, 3580A, 5030B, 5035L, 5035H, 3630C, 3640A, 3660B, 3665A, 8081A, 8082, 8260B, 8270C, 8015B.)

Atmospheric Organic Parameters (EPA TO-15)

Biological Tissue (Inorganic Parameters: SW-846 6020 Organic Parameters: SW-846 8270C, 3510C, 3570, 3630C, 3640A)

New York Department of Health Certificate/Lab ID: 11627. ***NELAP Accredited.***

Non-Potable Water (Inorganic Parameters: SM2320B, SM2540D, EPA 200.8, 6020, 1631E, 245.1, 9014, 9040B, 120.1, SM2510B, 4500CN-E, 4500H-B, EPA 376.2, 180.1, 9010B. Organic Parameters: EPA 8260B, 8270C, 8081A, 8082, 3510C, 5030B.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 6020, 7196A, 3060A, 7471A, 7474, 9014, 9040B, 9045C, 9010B. Organic Parameters: EPA 8260B, 8270C, 8081A, DRO 8015B, 8082, 1311, 1312, 3050B, 3580, 3570, 3051, 5035, 5030B.)

Air & Emissions (EPA TO-15.)

Rhode Island Department of Health Certificate/Lab ID: LAO00299. ***NELAP Accredited via LA-DEQ.***

Refer to LA-DEQ Certificate for Non-Potable Water.

Texas Commission of Environmental Quality Certificate/Lab ID: T104704419-08-TX. ***NELAP Accredited.***

Solid & Chemical Materials (Inorganic Parameters: EPA 6020, 7470, 7471, 1311, 7196, 9014, 9040, 9045, 9060. Organic Parameters: EPA 8015, 8270, 8260, 8081, 8082.)

Air (Organic Parameters: EPA TO-15)

Washington State Department of Ecology Certificate/Lab ID: C954. *Non-Potable Water* (Inorganic Parameters: SM2540D, 2510B, EPA 120.1, 180.1, 1631E, 245.7.)

Solid & Chemical Materials (Inorganic Parameters: EPA 9040, 9060, 6020, 7470, 7471, 7474. Organic Parameters: EPA 8081, 8082, 8015 Mod, 8270, 8260.)

U.S. Army Corps of Engineers

Department of Defense Certificate/Lab ID: L2217.01.

Non-Potable Water (Inorganic Parameters: EPA 6020A, SM4500H-B. Organic Parameters: 3020A, 3510C, 5030B, 8260B, 8270C, 8270C-ALK-PAH, 8082, 8081A, 8015D-SHC.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 1311, 1312, 3050B, 6020A, 7471A, 9045C, 9060, SM 2540G, ASTM D422-63. Organic Parameters: EPA 3580A, 3570, 3540C, 5035A, 8260B, 8270C, 8270-ALK-PAH, 8082, 8081A, 8015D-SHC, 8015-DRO.

Air & Emissions (EPA TO-15.)

Analytes Not Accredited by NELAP

Certification is not available by NELAP for the following analytes: **8270C:** Biphenyl. **TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 2-Methylnaphthalene, 1-Methylnaphthalene.

Serial_No:05061116:36

AIR ANALYSIS

PAGE 1 OF 2

CHAIN OF CUSTODY

ALPHA LABORATORIES
320 Forbes Blvd, Mansfield, MA 02048
TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab:

ALPHA Job #: L1105581

Client Information

Client: ARCADIS
Address: 482 Congress St Suite 501
Portland, ME 04101
Phone: 207-828-0046
Fax: 207-828-0062
Email: Mitch.Wadsworth@Arcadis-US.com
☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: UniFirst Wells G&H
Project Location: Woburn, MA
Project #: MA000984.0002.00003
Project Manager: Nadine Weinbers
ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)
Date Due: Time:

Report Information - Data Deliverables

☐ FAX
☐ ADEx
Criteria Checker:
(Default based on Regulatory Criteria Indicated)
Other Formats:
☐ EMAIL (standard pdf report)
☐ Additional Deliverables:
Report to: (if different than Project Manager)

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements/Report Limits

State/Fed	Program	Criteria

Other Project Specific Requirements/Comments:

All Columns Below Must Be Filled Out

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Start Time	End Time	Initial Vacuum	Final Vacuum	Sample Matrix*	Sampler's Initials	Can Size	I D Can	I D - Flow Controller	TO-14A by TO-15	TO-15	TO-15 SIM	APH	FIXED GASES	TO-13A	TO-4 / TO-10	Sample Comments (i.e. PID)
5581-1	OA-01	4/21/11	0958	4/22 0844	-29.9"	-3.4"	AA	MW	6L	1514	427			X					
5	IA-04	4/21/11	1016	4/22/1016	-30"	-5.2"	AA	MW	6L	983	420			X					
6	IA-05	4/21/11	1020	4/22/1018	-30"	-7.9"	AA	MW	6L	1565	476			X					
7	DupIA042111	4/21/11	—	—	-29.9"	-4.5"	AA	MW	6L	1658	017			X					
8	Trip Blank	4/21/11	—	—	—	—	AA	MW	6L	1644	480			X					

*SAMPLE MATRIX CODES: AA = Ambient Air (Indoor/Outdoor); SV = Soil Vapor/Landfill Gas/SVE; Other = Please Specify

Container Type

Relinquished By:	Date/Time	Received By:	Date/Time:
[illegible] 4/25/11 1005	4/21/11 1450	[illegible]	4/22/11 1423
P. Gillett 4/25/11 1005	4/22/11 1730	P. Gillett	4/22/11 1730
	4/25/11 900	P. Gillett	4/25/11 920

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Page 69

Form No: 101-02 (19-Jun-09)

AIR ANALYSIS

PAGE 2 OF 2

ALPHA Analytical — CHAIN OF CUSTODY

320 Forbes Blvd, Mansfield, MA 02048
TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab:

ALPHA Job #: L1105581

Serial_No:05061116:36

Client Information

Client: ARCADIS
Address: 482 Congress St Suite 501
Portland, ME 04101
Phone: ~~207-879-0~~ 207-828-0046
Fax: 207-828-0062
Email: Mitch.Wheldon@Arcadis-us.com

☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: Chi First Wells GBH
Project Location: Woburn, MA
Project #: MA000982 2007 0005
Project Manager: Noelle Weinberg
ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)

Date Due: Time:

Report Information - Data Deliverables

☐ FAX
☐ ADEx
Criteria Checker: _____
(Default based on Regulatory Criteria Indicated)
Other Formats: _____
☐ EMAIL (standard pdf report)
☐ Additional Deliverables: _____

Report to: (if different than Project Manager)

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements/Report Limits

State/Fed	Program	Criteria

Other Project Specific Requirements/Comments:

All Columns Below Must Be Filled Out

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Start Time	End Time	Initial Vacuum	Final Vacuum	Sample Matrix*	Sampler's Initials	Can Size	ID Can	ID - Flow Controller	ANALYSIS: TO-14A by TO-15	TO-15	TO-15 SIM	APH	FIXED GASES	TO-13A	TO-4 / TO-10	Sample Comments (i.e. PID)
55811	SS-4	4/22/11	1240	1310	-30	-6	SV	MW	6L	623	285			X					
12	SS-5	4/22/11	1222	1252	-30.2"	-6.9"	SV	MW	6L	1672	332			X					
13	Dup SS 4 22 11	4/22/11	—	—	-30	-6.9	SV	MW	6L	789	050								

*SAMPLE MATRIX CODES: AA = Ambient Air (Indoor/Outdoor); SV = Soil Vapor/Landfill Gas/SVE; Other = Please Specify

Container Type

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Relinquished By:	Date/Time:	Received By:	Date/Time:
[illegible] 4/25/11 1005			
P. Gillett 4/25/11 1005	4/22/11 1430	[illegible]	4/22/11 1430
[illegible]	4/22/11 900	P. Gillett	4/23/11 920

Form No: 101-02 (19-Jun-09)

Page 1 of 1

ARCADIS

Appendix E

Preliminary Human Health Risk Evaluation Report

ARCADIS
Infrastructure · Water · Environment · Buildings

Imagine the result

UniFirst Corporation

Appendix E

Preliminary Human Health Risk Evaluation Report

Residence, Parcel 26/ 05/ 05 – South Wells G&H Superfund Site
Woburn, Massachusetts

May 2011

Appendix E
Preliminary Human Health Risk Evaluation Report

Residence, Parcel 26/ 05/ 05 – South Wells G&H Superfund Site
Woburn, Massachusetts

Prepared for:
UniFirst Corporation

Prepared by:
ARCADIS U.S., Inc.
2 Executive Drive
Suite 303
Chelmsford
Massachusetts 01824
Tel 978 937 9999
Fax 978 937 7555

Our Ref.:
MA000989.0002

Date:
May 2011

ARCADIS

Table of Contents

Appendix E
Preliminary Human Health Risk Evaluation Report

Residence, Parcel 26/ 05/ 05 – South
Wells G&H Superfund Site
Woburn, Massachusetts

1. Introduction

ARCADIS has prepared a preliminary human health risk assessment based upon validated indoor air data presented in Table 1 of the Indoor Air Quality and Vapor Intrusion Assessment: Report of Results Residence; Parcel 26/05/05 - South from samples collected on April 21-22, 2011 at the southern half of the residential duplex at Woburn Parcel Number 26/05/05 (the Residence). The list of compounds of potential concern (COPCs) is in accordance with Table 1 of the *Indoor Air Quality and Vapor Intrusion Assessment Scope of Work* (*SOW*) (The Johnson Company [JCO] 2010a) submitted to the United States Environmental Protection Agency (USEPA) by The Johnson Company on behalf of the UniFirst Corporation in March 2010 and Table 2 of *Indoor Air Quality and Vapor Intrusion Assessment: Report of Results* (*IAQA/VI*) (JCO 2010b). COPCs that were detected in any indoor air sample were considered in the risk assessment.

2. Comparison to Acute Exposure Criteria

In order to screen for potential near-term human health hazards, indoor air data were compared to two sets of acute exposure criteria, including Acute Minimal Risk Levels (MRLs) and Acute Exposure Guideline Levels (AEGLs). In addition, indoor air data were compared to occupational criteria, including Permissible Exposure Limits (PELs) and Threshold Limit Values (TLVs®) (Table 1). Acute inhalation MRLs are derived by the Agency for Toxic Substances and Disease Registry (ATSDR) for noncarcinogenic effects from exposures lasting 14 days or less. AEGLs are set by USEPA for infrequent or one-time exposures to airborne compounds. An eight-hour AEGL-1 represents a level above which it is expected that the general population could experience significant but reversible irritation or discomfort. PELs are federal standards enforceable by the Occupational Safety and Health Administration (OSHA) for an eight-hour time-weighted average occupational exposure. TLVs® are eight-hour time-weighted averages proposed by the American Conference of Governmental Industrial Hygienists (ACGIH) for occupational hazard assessment. If no acute exposure criteria or occupational criteria were available for a given compound, surrogate values were used where appropriate (Table 1). Comparisons were based on individual samples (i.e., assuming that an individual person would consistently remain at the sample location throughout the relevant exposure period).

No result exceeded acute exposure criteria. Thus, acute indoor air exposures to the COPCs would not pose significant risks of harm to human health.

3. Risk Evaluation

Indoor air and outdoor air samples were collected at the Residence on April 21 and 22, 2011. Subslab soil vapor samples were collected on April 22, 2011. The indoor air samples were collected at two locations in the basement of the Residence. Analytical results indicate that the 10 constituents were detected in indoor air (Table 2). Of these 10 constituents, 1,2,4-trimethylbenzene, 1,2-dichloroethane, 1,3-butadiene, benzene, ethylbenzene, and xylenes were detected only in indoor air and not in sub-slab soil vapor, indicating that concentrations detected were associated with background sources.

Four of the 10 constituents detected in indoor air were also detected in sub-slab soil vapor, including carbon tetrachloride, chloroform, tetrachloroethene, and toluene (Table 2). Carbon tetrachloride was detected at equivalent concentrations in both indoor and outdoor air, indicating the carbon tetrachloride concentrations detected were associated with background sources. Calculated attenuation factors (AF) were greater than 1.0 for carbon tetrachloride, chloroform, and toluene, indicating these compounds were detected at greater concentrations in indoor air than sub-slab soil vapor and are therefore primarily associated with background sources. The calculated AF for tetrachloroethene (PCE) was 0.33, also indicating potential contributions from a background source.

During pre-sampling activities, ARCADIS staff conducted a building survey to document building conditions and products that were found in the basement of the Residence. The first and second floors of the Residence were not included in the building survey and the tenants of the Residence were not available at the time of sampling to be interviewed. Additional background sources therefore may have been present. The following potential background sources were identified during the survey:

- Bleach was noted in the home during the site visit, which may be a source of chloroform via reactions with other cleaning products (Odabasi 2008).
- Spray paint canisters were noted during the building survey. These could be sources of toluene.
- Various other cleaning products and aerosols were also noted.

Risks from inhalation of volatile organic compounds in indoor air were estimated for a current resident for both long- and short-term exposures. Exposure assumptions were based on current USEPA guidance (USEPA 2009) (Table 3).

In accordance with USEPA guidance, long-term exposure was defined as 30 years for a current resident. The short-term exposure was performed for a five-year exposure in accordance with Massachusetts Department of Environmental Protection (MADEP) guidance for Imminent Hazard (IH) evaluations to determine if an IH condition existed as defined in the Massachusetts Contingency Plan (MCP) (MADEP 2008a). As specified in the MCP, the IH evaluation was performed for current use receptors: current residents.

For each constituent, the exposure point concentration in indoor air is equal to the average concentration of the indoor air results. Residents were assumed to be present 24 hours per day in the building. Exposure parameters for each scenario are presented in Table 3.

Risks were estimated according to USEPA (2009) guidance and the MCP (MADEP 2008a). Volatile organic compounds in indoor air were not considered to pose significant cumulative risk to human health within or below the USEPA Superfund target excess lifetime cancer risk range of $1x10^{-6}$ to $1x10^{-4}$ for potential carcinogenic effects and a target Hazard Index (HI) of 1 for potential noncarcinogenic effects. The criteria applicable to the MADEP IH evaluation are a target excess lifetime cancer risk of $1x10^{-5}$ for potential carcinogenic effects and a target HI of 1 for potential noncarcinogenic effects.

The risk assessment was executed on all constituents that were detected in at least one indoor air sample, including several constituents that have been demonstrated *not* to be site-related. Carbon tetrachloride was detected at a similar concentration in outdoor air compared to indoor air. 1,2,4-Trimethylbenzene, 1,2-dichloroethane, 1,3-butadiene, benzene, ethylbenzene, and xylenes were not detected in any sub-slab soil vapor sample. Chloroform and toluene were detected at higher concentrations in indoor air compared to sub-slab soil gas. Toluene was also detected in outdoor air, so ambient air may have contributed to background concentrations. These constituents are present as a result of sources within the building and are not within the scope of a release to the environment addressed under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

4. Results

No indoor air sample exceeded acute exposure criteria or occupational criteria, and acute indoor air exposures to the COPCs are not estimated to pose significant risks to human health.

4.1 Current Resident (Short-Term)

As presented in Table 4, the cumulative estimated lifetime cancer risks for a short-term (five-year) exposure period to a current resident exposed to the average concentrations of COPCs detected in indoor air in the Residence did not exceed the MADEP IH target risk level of $1x10^{-5}$ (Table 4). Cumulative non-cancer hazards are equal to 0.1 for this exposure scenario. No IH condition as defined by the MCP was found to exist at the Residence for the short-term resident exposure scenario.

All risks to COPCs in indoor air were within the Superfund target excess lifetime cancer risk range of $1x10^{-6}$ to $1x10^{-4}$ and no individual chemical risk exceeded $1x10^{-6}$ (Table 4). It should be noted that the 26% of the risk was due to exposure to constituents that were not detected in any sub-slab soil vapor sample – 1,2-dichloroethane, 1,3-butadiene, benzene, and ethylbenzene. Additionally, 45% of risk was due to chloroform, which was detected at higher concentrations in indoor air than sub-slab soil vapor. Risks associated with PCE only account for 25% of the total risk, or an estimated risk level of $8x10^{-7}$. Based on a comparison of attenuation factors calculated for both the north and south sides of the duplex, background sources of PCE (dry-cleaned clothes) are likely contributing to this risk level (Magee et al. 2008).

4.2 Current Resident (Long-Term)

Cumulative estimated cancer risks for a long-term (30-year) exposure period to a current resident exposed to the average concentrations of COPCs detected in indoor air were within the Superfund target excess lifetime cancer risk range of $1x10^{-6}$ to $1x10^{-4}$ (Table 5). Cumulative non-cancer hazards are equal to 0.1 for this exposure scenario. Constituents not detected in sub-slab soil vapor make up 26% of the total risk, and chloroform accounts for 45% of total risk. The risk associated with exposure to PCE in indoor air is $5x10^{-6}$ for the long term current resident. This constitutes 25% of the total risk for the long term resident. Background sources of PCE are likely contributing to this risk level.

5. Conclusions and Recommendations

No indoor air sample exceeded acute exposure criteria or occupational criteria, and acute indoor air exposures to the COPCs are not estimated to pose significant risks to human health. Cumulative estimated carcinogenic and noncarcinogenic risks for current residents did not exceed target risk levels for a short-term (five-year) exposure period. No IH condition as defined by the MCP was found to exist at the Residence.

Long term estimated excess lifetime carcinogenic risks for current residents (30 years) are all within the Superfund target excess lifetime cancer risk range of $1x10^{-6}$ to $1x10^{-4}$ considering average indoor air concentrations and do not exceed $2x10^{-5}$ under any exposure scenario. All non-cancer HIs are below 1. All supporting risk assessment tables are provided in Attachment A.

PCE was detected at low levels (1.9 to 2.09 µg/m^3) that are consistent with background sources in residences throughout the United States. USEPA's indoor air background database reported a 50th percentile value of 0.7 µg/m^3, a 75th percentile value of 1.4 µg/m^3 and a 90th percentile value of 3.8 µg/m^3 for PCE (Dawson 2008). The potential carcinogenic risk level estimated for the low levels of PCE detected in the Residence is $5x10^{-6}$ for long-term exposure, a level of risk within USEPA's risk range for Superfund sites. The estimated total risk, including exposure to other compounds in the Residence originating from background sources (i.e., *not* site related), is $2x10^{-5}$. The PCE concentrations measured in the Residence are above the MADEP (2008b) Threshold Value (TV) for PCE (1.4 µg/m^3), but based on the calculated AF a background source is likely present (Magee et al. 2008).

In accordance with the approved Vapor Intrusion Assessment Work Plan, another round of sampling will be conducted under non heating season conditions for comparison to the first round of results. Prior to conducting the next round of sampling, ARCADIS recommends that additional steps be taken to document and, to the extent feasible, to eliminate identifiable background sources inside the Residence.

6. References

Dawson, Helen. 2008. Background Indoor Air Concentrations of Volatile Organic Compounds in North American Residences. Literature Review & Implications for Vapor Intrusion Assessment. Vapor Intrusion Workshop – AEHS Spring 2008, San Diego, California.

Massachusetts Department of Environmental Protection (MADEP). 2008a. Massachusetts Contingency Plan, 310 CMR 40.0000. Bureau of Waste Site Cleanup. February.

MADEP. 2008b. Indoor Air Threshold Values for the Evaluation of a Vapor Intrusion Pathway, Technical Update, Draft. June 26.

Odabasi, M. 2008. Halogenated Volatile Organic Compounds from the Use of Chlorine-Bleach-Containing Household Products. Environ. Sci. Technol. 42:1445-1451.

The Johnson Company (JCO). 2010a. Indoor Air Quality and Vapor Intrusion Assessment Scope of Work, Revision 2, UniFirst Property, Wells G&H Superfund Property. March 25.

JCO. 2010b. Indoor Air Quality and Vapor Intrusion Assessment Report of Results, UniFirst Property, Wells G&H Superfund Property. June 18.

United States Environmental Protection Agency (USEPA). 2009. Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part F, Supplemental Guidance for Inhalation Risk Assessment). Office of Superfund Remediation and Technology Innovation. EPA-540-R-070-002. January.

Magee, B., I. Penn, G. Logoni and S. Livio. 2008. Typical Levels of Tetrachlorethylene and Trichloroethylene in Residential Indoor Air. CONSOIL Conference. Milan, Italy.

ARCADIS

Table 1. Acute and Occupational Exposure Criteria for COPCs Detected in Indoor Air

Compound	ATSDR MRL	USEPA AEGL	OSHA PEL	ACGIH TLV
1,2,4-Trimethylbenzene	NA	2.21E+05	NA	1.23E+05
1,2-Dichloroethane	NA	NA	2.02E+05	NA
1,3-Butadiene	2.21E+02	1.48E+06	2.21E+03	4.42E+03
Benzene	2.87E+01	2.87E+04	3.19E+04	1.60E+03
Carbon tetrachloride	NA	1.20E+05	6.30E+04	3.15E+04
Chloroform	4.87E+02	1.41E+05	2.40E+05	4.87E+04
Ethylbenzene	4.34E+04	1.43E+05	4.35E+05	4.34E+05
Tetrachloroethene	1.36E+03	2.38E+05	6.79E+05	1.70E+05
Toluene	3.76E+03	7.53E+05	7.53E+05	7.53E+04
Xylenes	8.67E+03	5.64E+05	4.35E+05	4.34E+05

Notes:

All levels in µg/m^3. Levels reported in parts per million (ppm) were first converted to mg/m^3: (level in ppm)*(molecular weight)/24.45.

COPC = compound of potential concern

NA = value not available

ATSDR MRL = Agency for Toxic Substances and Disease Registry Minimum Risk Level (acute inhalation exposure)

USEPA AEGL = US Environmental Protection Agency Acute Exposure Guideline Level (8-hour AEGL 1; AEGL 2 if AEGL 1 not reported).

OSHA PEL = Occupational Safety and Health Administration Permissible Exposure Limits (29 CFR 1910 Subpart Z)

ACGIH TLV = American Conference of Governmental Industrial Hygienists Threshold Limit Value® (time-weighted average)

ARCADIS

Table 2. Residential Indoor Air and Sub-slab Soil Vapor Data with Attenuation Factors

Sample Name: Location: Date Collected:	Units	IA-4 Basement 4/22/2011	IA-5 Basement 4/22/2011	Average Detected Concentration in Indoor Air	SS-4 Sub-Slab 4/22/2011	SS-5 Sub-Slab 4/22/2011	Average Detected Concentration Sub-Slab Soil Vapor	OA-1 Outdoor 4/22/2011	Average Attenuation Factor (a)
1,1,1-Trichloroethane	ug/m3	0.109 U	0.109 U [0.109 U]	ND	0.109 U [0.109 U]	0.109 U	ND	0.109 U	NA
1,1,2-Trichloroethane	ug/m3	0.109 U	0.109 U [0.109 U]	ND	0.109 U [0.109 U]	0.109 U	ND	0.109 U	NA
1,1-Dichloroethane	ug/m3	0.0809 U	0.0809 U [0.0809 U]	ND	0.0809 U [0.0809 U]	0.0809 U	ND	0.0809 U	NA
1,1-Dichloroethene	ug/m3	0.0792 U	0.0792 U [0.0792 U]	ND	0.0792 U [0.0792 U]	0.0792 U	ND	0.0792 U	NA
1,2,4-Trimethylbenzene	ug/m3	0.201	0.167 [0.157]	0.182	0.0982 U [0.0982 U]	0.0982 U	ND	0.0982 U	NA
1,2-Dibromoethane	ug/m3	0.154 U	0.154 U [0.154 U]	ND	0.154 U [0.154 U]	0.154 U	ND	0.154 U	NA
1,2-Dichloroethane	ug/m3	0.125	0.113 [0.125]	0.122	0.0809 U [0.0809 U]	0.0809 U	ND	0.0809 U	NA
1,2-Dichloropropane	ug/m3	0.0924 U	0.0924 U [0.0924 U]	ND	0.0924 U [0.0924 U]	0.0924 U	ND	0.0924 U	NA
1,3-Butadiene	ug/m3	0.148	0.115 [0.124]	0.134	0.0442 U [0.0442 U]	0.0442 U	ND	0.0442 U	NA
1,3-Dichlorobenzene	ug/m3	0.12 U	0.12 U [0.12 U]	ND	0.12 U [0.12 U]	0.12 U	ND	0.12 U	NA
1,4-Dichlorobenzene	ug/m3	0.12 U	0.12 U [0.12 U]	ND	0.12 U [0.12 U]	0.12 U	ND	0.12 U	NA
Benzene	ug/m3	0.485	0.46 [0.469]	0.475	0.223 U [0.223 U]	0.223 U	ND	0.326	NA
Bromodichloromethane	ug/m3	0.134 U	0.134 U [0.134 U]	ND	0.134 U [0.134 U]	0.134 U	ND	0.134 U	NA
Bromoform	ug/m3	0.206 U	0.206 U [0.206 U]	ND	0.206 U [0.206 U]	0.206 U	ND	0.206 U	NA
Carbon Tetrachloride	ug/m3	0.358	0.339 [0.339]	0.349	0.17 [0.163]	0.327	0.247	0.352	1.41
Chlorobenzene	ug/m3	0.092 U	0.092 U [0.092 U]	ND	0.092 U [0.092 U]	0.092 U	ND	0.092 U	NA
Chloroform	ug/m3	1.18	0.629 [0.663]	0.913	0.122 [0.112]	0.18	0.149	0.0976 U	6.15
cis-1,2-Dichloroethene	ug/m3	0.0792 U	0.0792 U [0.0792 U]	ND	0.0792 U [0.0792 U]	0.0792 U	ND	0.0792 U	NA
Ethylbenzene	ug/m3	0.317	0.295 [0.304]	0.308	0.0868 U [0.0868 U]	0.0868 U	ND	0.087	NA
Isopropylbenzene	ug/m3	2.46 U	2.46 U [2.46 U]	ND	2.46 U [2.46 U]	2.46 U	ND	2.46 U	NA
Methylene Chloride	ug/m3	1.74 U	1.74 U [1.74 U]	ND	1.74 U [1.74 U]	1.74 U	ND	1.74 U	NA
Methyl tert-butyl ether	ug/m3	0.072 UJ	0.072 UJ [0.072 UJ]	ND	0.072 UJ [0.072 UJ]	0.072 UJ	ND	0.072 UJ	NA
Naphthalene	ug/m3	0.183 UJ	0.262 UJ [0.131 UJ]	ND	0.262 U [0.262 U]	0.262 U	ND	0.262 U	NA
Tetrachloroethene	ug/m3	1.9	1.96 [2.09]	1.96	12 [11.3]	0.352	6.00	0.136 U	0.33
Toluene	ug/m3	3.1	2.96 [2.97]	3.03	0.188 U [0.233]	0.188 U	0.233	0.561	13.02
trans-1,2-Dichloroethene	ug/m3	0.0792 U	0.0792 U [0.0792 U]	ND	0.0792 U [0.0792 U]	0.0792 U	ND	0.0792 U	NA
trans-1,3-Dichloropropene	ug/m3	0.0907 UJ	0.0907 UJ [0.0907 UJ]	ND	0.0907 UJ [0.0907 UJ]	0.0907 UJ	ND	0.0907 UJ	NA
Trichloroethene	ug/m3	0.107 U	0.107 U [0.107 U]	ND	0.107 U [0.107 U]	0.107 U	ND	0.107 U	NA
Vinyl Chloride	ug/m3	0.0511 U	0.0511 U [0.0511 U]	ND	0.0511 U [0.0511 U]	0.0511 U	ND	0.0511 U	NA
Xylenes (total)	ug/m3	0.698	0.681 [0.672]	0.687	0.26 U [0.26 U]	0.26 U	ND	0.26 U	NA

Notes:
(a) Attenuation Factor calculated as the ratio of the average detected indoor air to average detected sub-slab soil vapor concentration
U - The compound was analyzed for but not detected. The associated value is the compound quantitation limit
ug/m3 - Micrograms per cubic meter
IA - Indoor air sample
OA - Ambient air sample
SS - Sub-slab soil vapor sample
NA - Not applicable
ND - Not detected

ARCADIS

Table 3. Exposure Assumptions for the Estimation of Risks from Inhalation of Volatile Constituents in Indoor Air for a Resident

Parameter	Units	Current Future Resident – Short Term			Current Future Resident – Long Term		
		Value	Source	Comment	Value	Source	Comment
Exposure Time	hours/day	24	(a)		24	(a)	
Exposure Frequency	days/year	350	(a)		350	(a)	
Exposure Duration	years	5	(b)		30	(a)	
Averaging Time – Cancer	hours	613200	(a)		613200	(a)	
Averaging Time – Non-Cancer	hours	262800	(a)		262800	(a)	

Notes:
(a) USEPA 2009
(b) MADEP 2008a

ARCADIS

Table 4. Estimated Risks to a Resident from Short Term Exposure to Volatile Constituents in Indoor Air via Inhalation

Parameter	Definition	Units	Value
ET	Indoor Air Exposure Time	hours/day	24
EF	Indoor Air Exposure Frequency	days/yr	350
ED	Indoor Air Exposure Duration	years	5
ATc	Indoor Air Averaging Time - Cancer	hours	613200
ATn	Indoor Air Averaging Time - Non-Cancer	hours	43800
CF	Conversion Factor	ug/mg	1000

Compound	EPC (a) Indoor Air (mg/m3)	RfC (mg/m3)	URF 1/(ug/m3)	ADE-c mg/m3	ADE-nc mg/m3	Cancer Risk Indoor Air (unitless)	HI Indoor Air (unitless)	% of Total Cancer Risk (unitless)	% of Total Noncancer HI (unitless)
1,1,1-Trichloroethane	ND	5	NA	ND	ND	ND	ND	NA	NA
1,1,2-Trichloroethane	ND	NA	0.000016	ND	ND	ND	ND	NA	NA
1,1-Dichloroethane	ND	NA	0.0000016	ND	ND	ND	ND	NA	NA
1,1-Dichloroethene	ND	0.2	NA	ND	ND	ND	ND	NA	NA
1,2,4-Trimethylbenzene	1.82E-04	0.007	NA	NA	1.74E-04	NA	0.02	NA	19%
1,2-Dibromoethane	ND	0.009	0.0006	ND	ND	ND	ND	NA	NA
1,2-Dichloroethane	1.22E-04	2.4	0.000026	8.36E-06	1.17E-04	2E-07	0.00005	7%	0%
1,2-Dichloropropane	ND	0.004	0.00001	ND	ND	ND	ND	NA	NA
1,3-Butadiene	1.34E-04	0.002	0.00003	9.18E-06	1.28E-04	3E-07	0.1	9%	49%
1,3-Dichlorobenzene	ND	0.2	NA	ND	ND	ND	ND	NA	NA
1,4-Dichlorobenzene	ND	0.8	0.000011	ND	ND	ND	ND	NA	NA
Benzene	4.75E-04	0.03	0.0000078	3.25E-05	4.55E-04	3E-07	0.02	8%	12%
Bromodichloromethane	ND	NA	0.000037	ND	ND	ND	ND	NA	NA
Bromoform	ND	NA	0.0000011	ND	ND	ND	ND	NA	NA
Carbon tetrachloride	3.49E-04	0.1	0.000006	2.39E-05	3.34E-04	1E-07	0.003	5%	3%
Chlorobenzene	ND	0.05	NA	ND	ND	ND	ND	NA	NA
Chloroform	9.13E-04	0.098	0.000023	6.25E-05	8.75E-04	1E-06	0.009	45%	7%
cis-1,2-Dichloroethene	ND	0.035	NA	ND	ND	ND	ND	NA	NA
Ethylbenzene	3.09E-04	1	0.0000025	2.11E-05	2.96E-04	5E-08	0.0003	2%	0%
Isopropylbenzene	ND	0.4	NA	ND	ND	ND	ND	NA	NA
Methylene chloride	ND	1	0.00000047	ND	ND	ND	ND	NA	NA
Methyl tert butyl ether	ND	3	0.00000026	ND	ND	ND	ND	NA	NA
Naphthalene	ND	0.003	0.000034	ND	ND	ND	ND	NA	NA
Tetrachloroethene	1.97E-03	0.27	0.0000059	1.35E-04	1.88E-03	8E-07	0.007	25%	5%
Toluene	3.04E-03	5	NA	NA	2.91E-03	NA	0.001	NA	0%
trans-1,2-Dichloroethene	ND	0.06	NA	ND	ND	ND	ND	NA	NA
trans-1,3-Dichloropropene	ND	0.02	0.000004	ND	ND	ND	ND	NA	NA
Trichloroethene	ND	NA	0.000002	ND	ND	ND	ND	NA	NA
Vinyl chloride	ND	0.1	0.0000044	ND	ND	ND	ND	NA	NA
Xylenes	6.88E-04	0.1	NA	NA	6.59E-04	NA	0.01	NA	5%
Total						3E-06	0.1	100%	100%

$$ADE = \frac{EPC_{air} \times ET \times EF \times ED}{AT}$$

$$HI_{inh} = \frac{ADE}{RfC}$$

$$Risk = ADE \times URF \times CF$$

Notes:

(a) EPC calculated as average of detected concentrations and one-half indoor air detection limit for non-detects.

EC = exposure concentration

EPC - exposure point concentration

RfC - reference concentration

URF - unit risk factor

ADE-c - average daily exposure (cancer)

ADE-nc - average daily exposure (noncancer)

HI - noncancer hazard index

ug/mg3 - microgram per cubic milligram

NA - Not available

ND - Not detected

mg/m3 - milligram per cubic meter

ARCADIS

Table 5. Estimated Risks to a Resident from Long Term Exposure to Volatile Constituents in Indoor Air via Inhalation

Parameter	Definition	Units	Value
ET	Indoor Air Exposure Time	hours/day	24
EF	Indoor Air Exposure Frequency	days/yr	350
ED	Indoor Air Exposure Duration	years	30
ATc	Indoor Air Averaging Time - Cancer	hours	613200
ATn	Indoor Air Averaging Time - Non-Cancer	hours	262800
CF	Conversion Factor	ug/mg	1000

Compound	EPC (a) Indoor Air (mg/m3)	RfC (mg/m3)	URF 1/(ug/m3)	ADE-c mg/m3	ADE-nc mg/m3	Cancer Risk Indoor Air (unitless)	HI Indoor Air (unitless)	% of Total Cancer Risk (unitless)	% of Total Noncancer HI (unitless)
1,1,1-Trichloroethane	ND	5	NA	ND	ND	ND	ND	NA	NA
1,1,2-Trichloroethane	ND	NA	0.000016	ND	ND	ND	ND	NA	NA
1,1-Dichloroethane	ND	NA	0.0000016	ND	ND	ND	ND	NA	NA
1,1-Dichloroethene	ND	0.2	NA	ND	ND	ND	ND	NA	NA
1,2,4-Trimethylbenzene	1.82E-04	0.007	NA	NA	1.74E-04	NA	0.02	NA	19%
1,2-Dibromoethane	ND	0.009	0.0006	ND	ND	ND	ND	NA	NA
1,2-Dichloroethane	1.22E-04	2.4	0.000026	5.01E-05	1.17E-04	1E-06	0.00005	7%	0%
1,2-Dichloropropane	ND	0.004	0.00001	ND	ND	ND	ND	NA	NA
1,3-Butadiene	1.34E-04	0.002	0.00003	5.51E-05	1.28E-04	2E-06	0.1	9%	49%
1,3-Dichlorobenzene	ND	0.2	NA	ND	ND	ND	ND	NA	NA
1,4-Dichlorobenzene	ND	0.8	0.000011	ND	ND	ND	ND	NA	NA
Benzene	4.75E-04	0.03	0.0000078	1.95E-04	4.55E-04	2E-06	0.02	8%	12%
Bromodichloromethane	ND	NA	0.000037	ND	ND	ND	ND	NA	NA
Bromoform	ND	NA	0.0000011	ND	ND	ND	ND	NA	NA
Carbon tetrachloride	3.49E-04	0.1	0.000006	1.43E-04	3.34E-04	9E-07	0.003	5%	3%
Chlorobenzene	ND	0.05	NA	ND	ND	ND	ND	NA	NA
Chloroform	9.13E-04	0.098	0.000023	3.75E-04	8.75E-04	9E-06	0.009	45%	7%
cis-1,2-Dichloroethene	ND	0.035	NA	ND	ND	ND	ND	NA	NA
Ethylbenzene	3.09E-04	1	0.0000025	1.27E-04	2.96E-04	3E-07	0.0003	2%	0%
Isopropylbenzene	ND	0.4	NA	ND	ND	ND	ND	NA	NA
Methylene chloride	ND	1	0.00000047	ND	ND	ND	ND	NA	NA
Methyl tert butyl ether	ND	3	0.00000026	ND	ND	ND	ND	NA	NA
Naphthalene	ND	0.003	0.000034	ND	ND	ND	ND	NA	NA
Tetrachloroethene	1.97E-03	0.27	0.0000059	8.08E-04	1.88E-03	5E-06	0.007	25%	5%
Toluene	3.04E-03	5	NA	NA	2.91E-03	NA	0.001	NA	0%
trans-1,2-Dichloroethene	ND	0.06	NA	ND	ND	ND	ND	NA	NA
trans-1,3-Dichloropropene	ND	0.02	0.000004	ND	ND	ND	ND	NA	NA
Trichloroethene	ND	NA	0.000002	ND	ND	ND	ND	NA	NA
Vinyl chloride	ND	0.1	0.0000044	ND	ND	ND	ND	NA	NA
Xylenes	6.88E-04	0.1	NA	NA	6.59E-04	NA	0.01	NA	5%
Total						2E-05	0.1	100%	100%

$$ADE = \frac{EPC_{air} \times ET \times EF \times ED}{AT}$$

$$HI_{inh} = \frac{ADE}{RfC}$$

$$Risk = ADE \times URF \times CF$$

Notes:

(a) EPC calculated as average of detected concentrations and one-half indoor air detection limit for non-detects.

EC = exposure concentration

EPC - exposure point concentration

RfC - reference concentration

URF - unit risk factor

ADE-c - average daily exposure (cancer)

ADE-nc - average daily exposure (noncancer)

HI - noncancer hazard index

ug/mg3 - microgram per cubic milligram

NA - Not available

ND - Not detected

mg/m3 - milligram per cubic meter

ARCADIS

Attachment A

Risk Tables

ARCADIS

Table A1. Estimated Risks to a Resident from Short Term Exposure to Volatile Constituents in Indoor Air via Inhalation - Sample IA-4 26/05/05 South

Parameter	Definition	Units	Value
ET	Indoor Air Exposure Time	hours/day	24
EF	Indoor Air Exposure Frequency	days/yr	350
ED	Indoor Air Exposure Duration	years	5
ATc	Indoor Air Averaging Time - Cancer	hours	613200
ATn	Indoor Air Averaging Time - Non-Cancer	hours	43800
CF	Conversion Factor	ug/mg	1000

Compound	EPC (a) Indoor Air (mg/m3)	RfC (mg/m3)	URF 1/(ug/m3)	ADE-c mg/m3	ADE-nc mg/m3	Cancer Risk Indoor Air (unitless)	HI Indoor Air (unitless)	% of Total Cancer Risk (unitless)	% of Total Noncancer HI (unitless)
1,1,1-Trichloroethane	ND	5	NA	ND	ND	ND	ND	NA	NA
1,1,2-Trichloroethane	ND	NA	0.000016	ND	ND	ND	ND	NA	NA
1,1-Dichloroethane	ND	NA	0.0000016	ND	ND	ND	ND	NA	NA
1,1-Dichloroethene	ND	0.2	NA	ND	ND	ND	ND	NA	NA
1,2,4-Trimethylbenzene	2.01E-04	0.007	NA	NA	1.93E-04	NA	0.03	NA	19%
1,2-Dibromoethane	ND	0.009	0.0006	ND	ND	ND	ND	NA	NA
1,2-Dichloroethane	1.25E-04	2.4	0.000026	8.56E-06	1.20E-04	2E-07	0.00005	6%	0%
1,2-Dichloropropane	ND	0.004	0.00001	ND	ND	ND	ND	NA	NA
1,3-Butadiene	1.48E-04	0.002	0.00003	1.01E-05	1.42E-04	3E-07	0.1	8%	49%
1,3-Dichlorobenzene	ND	0.2	NA	ND	ND	ND	ND	NA	NA
1,4-Dichlorobenzene	ND	0.8	0.000011	ND	ND	ND	ND	NA	NA
Benzene	4.85E-04	0.03	0.0000078	3.32E-05	4.65E-04	3E-07	0.02	7%	11%
Bromodichloromethane	ND	NA	0.000037	ND	ND	ND	ND	NA	NA
Bromoform	ND	NA	0.0000011	ND	ND	ND	ND	NA	NA
Carbon tetrachloride	3.58E-04	0.1	0.000006	2.45E-05	3.43E-04	1E-07	0.003	4%	2%
Chlorobenzene	ND	0.05	NA	ND	ND	ND	ND	NA	NA
Chloroform	1.18E-03	0.098	0.000023	8.08E-05	1.13E-03	2E-06	0.01	51%	8%
cis-1,2-Dichloroethene	ND	0.035	NA	ND	ND	ND	ND	NA	NA
Ethylbenzene	3.17E-04	1	0.0000025	2.17E-05	3.04E-04	5E-08	0.0003	2%	0%
Isopropylbenzene	ND	0.4	NA	ND	ND	ND	ND	NA	NA
Methylene chloride	ND	1	0.00000047	ND	ND	ND	ND	NA	NA
Methyl tert butyl ether	ND	3	0.00000026	ND	ND	ND	ND	NA	NA
Naphthalene	ND	0.003	0.000034	ND	ND	ND	ND	NA	NA
Tetrachloroethene	1.90E-03	0.27	0.0000059	1.30E-04	1.82E-03	8E-07	0.007	21%	5%
Toluene	3.10E-03	5	NA	NA	2.97E-03	NA	0.001	NA	0%
trans-1,2-Dichloroethene	ND	0.06	NA	ND	ND	ND	ND	NA	NA
trans-1,3-Dichloropropene	ND	0.02	0.000004	ND	ND	ND	ND	NA	NA
Trichloroethene	ND	NA	0.000002	ND	ND	ND	ND	NA	NA
Vinyl chloride	ND	0.1	0.0000044	ND	ND	ND	ND	NA	NA
Xylenes	6.98E-04	0.1	NA	NA	6.69E-04	NA	0.01	NA	5%
Total						4E-06	0.1	100%	100%

$$ADE = \frac{EPC_{air} \times ET \times EF \times ED}{AT}$$

$$HI_{inh} = \frac{ADE}{RfC}$$

$$Risk = ADE \times URF \times CF$$

Notes:
(a) EPC calculated as average of detected concentrations and one-half indoor air detection limit for non-detects.
EC = exposure concentration
EPC - exposure point concentration
RfC - reference concentration
URF - unit risk factor
ADE-c - average daily exposure (cancer)
ADE-nc - average daily exposure (noncancer)
HI - noncancer hazard index
ug/mg3 - microgram per cubic milligram
NA - Not available
ND - Not detected
mg/m3 - milligram per cubic meter

ARCADIS

Table A2. Estimated Risks to a Resident from Long Term Exposure to Volatile Constituents in Indoor Air via Inhalation - Sample IA-4 26/05/05 South

Parameter	Definition	Units	Value
ET	Indoor Air Exposure Time	hours/day	24
EF	Indoor Air Exposure Frequency	days/yr	350
ED	Indoor Air Exposure Duration	years	30
ATc	Indoor Air Averaging Time - Cancer	hours	613200
ATn	Indoor Air Averaging Time - Non-Cancer	hours	262800
CF	Conversion Factor	ug/mg	1000

Compound	EPC (a) Indoor Air (mg/m3)	RfC (mg/m3)	URF 1/(ug/m3)	ADE-c mg/m3	ADE-nc mg/m3	Cancer Risk Indoor Air (unitless)	HI Indoor Air (unitless)	% of Total Cancer Risk (unitless)	% of Total Noncancer HI (unitless)
1,1,1-Trichloroethane	ND	5	NA	ND	ND	ND	ND	NA	NA
1,1,2-Trichloroethane	ND	NA	0.000016	ND	ND	ND	ND	NA	NA
1,1-Dichloroethane	ND	NA	0.0000016	ND	ND	ND	ND	NA	NA
1,1-Dichloroethene	ND	0.2	NA	ND	ND	ND	ND	NA	NA
1,2,4-Trimethylbenzene	2.01E-04	0.007	NA	NA	1.93E-04	NA	0.03	NA	19%
1,2-Dibromoethane	ND	0.009	0.0006	ND	ND	ND	ND	NA	NA
1,2-Dichloroethane	1.25E-04	2.4	0.000026	5.14E-05	1.20E-04	1E-06	0.00005	6%	0%
1,2-Dichloropropane	ND	0.004	0.00001	ND	ND	ND	ND	NA	NA
1,3-Butadiene	1.48E-04	0.002	0.00003	6.08E-05	1.42E-04	2E-06	0.1	8%	49%
1,3-Dichlorobenzene	ND	0.2	NA	ND	ND	ND	ND	NA	NA
1,4-Dichlorobenzene	ND	0.8	0.000011	ND	ND	ND	ND	NA	NA
Benzene	4.85E-04	0.03	0.0000078	1.99E-04	4.65E-04	2E-06	0.02	7%	11%
Bromodichloromethane	ND	NA	0.000037	ND	ND	ND	ND	NA	NA
Bromoform	ND	NA	0.0000011	ND	ND	ND	ND	NA	NA
Carbon tetrachloride	3.58E-04	0.1	0.000006	1.47E-04	3.43E-04	9E-07	0.003	4%	2%
Chlorobenzene	ND	0.05	NA	ND	ND	ND	ND	NA	NA
Chloroform	1.18E-03	0.098	0.000023	4.85E-04	1.13E-03	1E-05	0.01	51%	8%
cis-1,2-Dichloroethene	ND	0.035	NA	ND	ND	ND	ND	NA	NA
Ethylbenzene	3.17E-04	1	0.0000025	1.30E-04	3.04E-04	3E-07	0.0003	2%	0%
Isopropylbenzene	ND	0.4	NA	ND	ND	ND	ND	NA	NA
Methylene chloride	ND	1	0.00000047	ND	ND	ND	ND	NA	NA
Methyl tert butyl ether	ND	3	0.00000026	ND	ND	ND	ND	NA	NA
Naphthalene	ND	0.003	0.000034	ND	ND	ND	ND	NA	NA
Tetrachloroethene	1.90E-03	0.27	0.0000059	7.81E-04	1.82E-03	5E-06	0.007	21%	5%
Toluene	3.10E-03	5	NA	NA	2.97E-03	NA	0.001	NA	0%
trans-1,2-Dichloroethene	ND	0.06	NA	ND	ND	ND	ND	NA	NA
trans-1,3-Dichloropropene	ND	0.02	0.000004	ND	ND	ND	ND	NA	NA
Trichloroethene	ND	NA	0.000002	ND	ND	ND	ND	NA	NA
Vinyl chloride	ND	0.1	0.0000044	ND	ND	ND	ND	NA	NA
Xylenes	6.98E-04	0.1	NA	NA	6.69E-04	NA	0.01	NA	5%
Total						2E-05	0.1	100%	100%

$$ADE = \frac{EPC_{air} \times ET \times EF \times ED}{AT}$$

$$HI_{inh} = \frac{ADE}{RfC}$$

$$Risk = ADE \times URF \times CF$$

Notes:

(a) EPC calculated as average of detected concentrations and one-half indoor air detection limit for non-detects.

EC = exposure concentration

EPC - exposure point concentration

RfC - reference concentration

URF - unit risk factor

ADE-c - average daily exposure (cancer)

ADE-nc - average daily exposure (noncancer)

HI - noncancer hazard index

ug/mg3 - microgram per cubic milligram

NA - Not available

ND - Not detected

mg/m3 - milligram per cubic meter

ARCADIS

Table A3. Estimated Risks to a Resident from Short Term Exposure to Volatile Constituents in Indoor Air via Inhalation - Sample IA-5 26/05/05 South

Parameter	Definition	Units	Value
ET	Indoor Air Exposure Time	hours/day	24
EF	Indoor Air Exposure Frequency	days/yr	350
ED	Indoor Air Exposure Duration	years	5
ATc	Indoor Air Averaging Time - Cancer	hours	613200
ATn	Indoor Air Averaging Time - Non-Cancer	hours	43800
CF	Conversion Factor	ug/mg	1000

Compound	EPC (a) Indoor Air (mg/m3)	RfC (mg/m3)	URF 1/(ug/m3)	ADE-c mg/m3	ADE-nc mg/m3	Cancer Risk Indoor Air (unitless)	HI Indoor Air (unitless)	% of Total Cancer Risk (unitless)	% of Total Noncancer HI (unitless)
1,1,1-Trichloroethane	ND	5	NA	ND	ND	ND	ND	NA	NA
1,1,2-Trichloroethane	ND	NA	0.000016	ND	ND	ND	ND	NA	NA
1,1-Dichloroethane	ND	NA	0.0000016	ND	ND	ND	ND	NA	NA
1,1-Dichloroethene	ND	0.2	NA	ND	ND	ND	ND	NA	NA
1,2,4-Trimethylbenzene	1.62E-04	0.007	NA	NA	1.55E-04	NA	0.02	NA	19%
1,2-Dibromoethane	ND	0.009	0.0006	ND	ND	ND	ND	NA	NA
1,2-Dichloroethane	1.19E-04	2.4	0.000026	8.15E-06	1.14E-04	2E-07	0.00005	8%	0%
1,2-Dichloropropane	ND	0.004	0.00001	ND	ND	ND	ND	NA	NA
1,3-Butadiene	1.20E-04	0.002	0.00003	8.22E-06	1.15E-04	2E-07	0.1	9%	48%
1,3-Dichlorobenzene	ND	0.2	NA	ND	ND	ND	ND	NA	NA
1,4-Dichlorobenzene	ND	0.8	0.000011	ND	ND	ND	ND	NA	NA
Benzene	4.65E-04	0.03	0.0000078	3.18E-05	4.46E-04	2E-07	0.01	9%	13%
Bromodichloromethane	ND	NA	0.000037	ND	ND	ND	ND	NA	NA
Bromoform	ND	NA	0.0000011	ND	ND	ND	ND	NA	NA
Carbon tetrachloride	3.39E-04	0.1	0.000006	2.32E-05	3.25E-04	1E-07	0.003	5%	3%
Chlorobenzene	ND	0.05	NA	ND	ND	ND	ND	NA	NA
Chloroform	6.46E-04	0.098	0.000023	4.42E-05	6.19E-04	1E-06	0.006	37%	5%
cis-1,2-Dichloroethene	ND	0.035	NA	ND	ND	ND	ND	NA	NA
Ethylbenzene	3.00E-04	1	0.0000025	2.05E-05	2.88E-04	5E-08	0.0003	2%	0%
Isopropylbenzene	ND	0.4	NA	ND	ND	ND	ND	NA	NA
Methylene chloride	ND	1	0.00000047	ND	ND	ND	ND	NA	NA
Methyl tert butyl ether	ND	3	0.00000026	ND	ND	ND	ND	NA	NA
Naphthalene	ND	0.003	0.000034	ND	ND	ND	ND	NA	NA
Tetrachloroethene	2.03E-03	0.27	0.0000059	1.39E-04	1.95E-03	8E-07	0.007	30%	6%
Toluene	2.97E-03	5	NA	NA	2.85E-03	NA	0.001	NA	0%
trans-1,2-Dichloroethene	ND	0.06	NA	ND	ND	ND	ND	NA	NA
trans-1,3-Dichloropropene	ND	0.02	0.000004	ND	ND	ND	ND	NA	NA
Trichloroethene	ND	NA	0.000002	ND	ND	ND	ND	NA	NA
Vinyl chloride	ND	0.1	0.0000044	ND	ND	ND	ND	NA	NA
Xylenes	6.77E-04	0.1	NA	NA	6.49E-04	NA	0.01	NA	5%
Total						3E-06	0.1	100%	100%

$$ADE = \frac{EPC_{air} \times ET \times EF \times ED}{AT}$$

$$HI_{inh} = \frac{ADE}{RfC}$$

$$Risk = ADE \times URF \times CF$$

Notes:
(a) EPC calculated as average of detected concentrations and one-half indoor air detection limit for non-detects.
EC = exposure concentration
EPC - exposure point concentration
RfC - reference concentration
URF - unit risk factor
ADE-c - average daily exposure (cancer)
ADE-nc - average daily exposure (noncancer)
HI - noncancer hazard index
ug/mg3 - microgram per cubic milligram
NA - Not available
ND - Not detected
mg/m3 - milligram per cubic meter

ARCADIS

Table A4. Estimated Risks to a Resident from Long Term Exposure to Volatile Constituents in Indoor Air via Inhalation - Sample IA-5 26/05/05 South

Parameter	Definition	Units	Value
ET	Indoor Air Exposure Time	hours/day	24
EF	Indoor Air Exposure Frequency	days/yr	350
ED	Indoor Air Exposure Duration	years	30
ATc	Indoor Air Averaging Time - Cancer	hours	613200
ATn	Indoor Air Averaging Time - Non-Cancer	hours	262800
CF	Conversion Factor	ug/mg	1000

Compound	EPC (a) Indoor Air (mg/m3)	RfC (mg/m3)	URF 1/(ug/m3)	ADE-c mg/m3	ADE-nc mg/m3	Cancer Risk Indoor Air (unitless)	HI Indoor Air (unitless)	% of Total Cancer Risk (unitless)	% of Total Noncancer HI (unitless)
1,1,1-Trichloroethane	ND	5	NA	ND	ND	ND	ND	NA	NA
1,1,2-Trichloroethane	ND	NA	0.000016	ND	ND	ND	ND	NA	NA
1,1-Dichloroethane	ND	NA	0.0000016	ND	ND	ND	ND	NA	NA
1,1-Dichloroethene	ND	0.2	NA	ND	ND	ND	ND	NA	NA
1,2,4-Trimethylbenzene	1.62E-04	0.007	NA	NA	1.55E-04	NA	0.02	NA	19%
1,2-Dibromoethane	ND	0.009	0.0006	ND	ND	ND	ND	NA	NA
1,2-Dichloroethane	1.19E-04	2.4	0.000026	4.89E-05	1.14E-04	1E-06	0.00005	8%	0%
1,2-Dichloropropane	ND	0.004	0.00001	ND	ND	ND	ND	NA	NA
1,3-Butadiene	1.20E-04	0.002	0.00003	4.93E-05	1.15E-04	1E-06	0.1	9%	48%
1,3-Dichlorobenzene	ND	0.2	NA	ND	ND	ND	ND	NA	NA
1,4-Dichlorobenzene	ND	0.8	0.000011	ND	ND	ND	ND	NA	NA
Benzene	4.65E-04	0.03	0.0000078	1.91E-04	4.46E-04	1E-06	0.01	9%	13%
Bromodichloromethane	ND	NA	0.000037	ND	ND	ND	ND	NA	NA
Bromoform	ND	NA	0.0000011	ND	ND	ND	ND	NA	NA
Carbon tetrachloride	3.39E-04	0.1	0.000006	1.39E-04	3.25E-04	8E-07	0.003	5%	3%
Chlorobenzene	ND	0.05	NA	ND	ND	ND	ND	NA	NA
Chloroform	6.46E-04	0.098	0.000023	2.65E-04	6.19E-04	6E-06	0.006	37%	5%
cis-1,2-Dichloroethene	ND	0.035	NA	ND	ND	ND	ND	NA	NA
Ethylbenzene	3.00E-04	1	0.0000025	1.23E-04	2.88E-04	3E-07	0.0003	2%	0%
Isopropylbenzene	ND	0.4	NA	ND	ND	ND	ND	NA	NA
Methylene chloride	ND	1	0.00000047	ND	ND	ND	ND	NA	NA
Methyl tert butyl ether	ND	3	0.00000026	ND	ND	ND	ND	NA	NA
Naphthalene	ND	0.003	0.000034	ND	ND	ND	ND	NA	NA
Tetrachloroethene	2.03E-03	0.27	0.0000059	8.34E-04	1.95E-03	5E-06	0.007	30%	6%
Toluene	2.97E-03	5	NA	NA	2.85E-03	NA	0.001	NA	0%
trans-1,2-Dichloroethene	ND	0.06	NA	ND	ND	ND	ND	NA	NA
trans-1,3-Dichloropropene	ND	0.02	0.000004	ND	ND	ND	ND	NA	NA
Trichloroethene	ND	NA	0.000002	ND	ND	ND	ND	NA	NA
Vinyl chloride	ND	0.1	0.0000044	ND	ND	ND	ND	NA	NA
Xylenes	6.77E-04	0.1	NA	NA	6.49E-04	NA	0.01	NA	5%
Total						2E-05	0.1	100%	100%

$$ADE = \frac{EPC_{air} \times ET \times EF \times ED}{AT}$$

$$HI_{inh} = \frac{ADE}{RfC}$$

$$Risk = ADE \times URF \times CF$$

Notes:
(a) EPC calculated as average of detected concentrations and one-half indoor air detection limit for non-detects.
EC = exposure concentration
EPC - exposure point concentration
RfC - reference concentration
URF - unit risk factor
ADE-c - average daily exposure (cancer)
ADE-nc - average daily exposure (noncancer)
HI - noncancer hazard index
ug/mg3 - microgram per cubic milligram
NA - Not available
ND - Not detected
mg/m3 - milligram per cubic meter